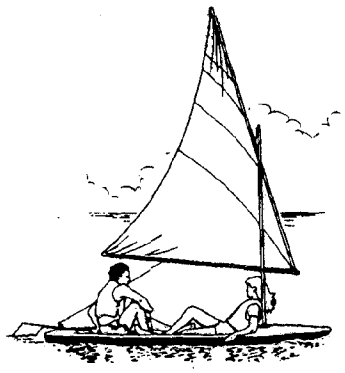
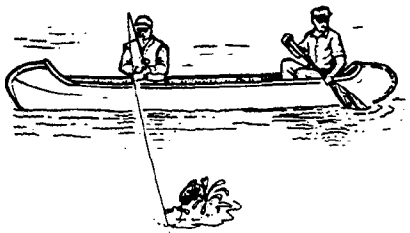


DESCHUTES CORRIDOR RECREATION PLAN 1986

Thurston Regional Planning Council



DESCHUTES CORRIDOR RECREATION PLAN

JUNE, 1986

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DESCHUTES CORRIDOR RECREATION PLAN

REVISED DRAFT--FINDINGS AND RECOMMENDATIONS

I. SUMMARY OF RECOMMENDATIONS

A. INTENT OF THE DESCHUTES CORRIDOR RECREATION PLAN

The goal of the Deschutes Corridor Recreation Plan is to study recreational uses in the Deschutes River Corridor from Rich Road to Budd Inlet in order to:

1. Assess present and future recreational needs.

2. Protect interests of the property owners and insure the preservation of the corridor's natural resources.

3. Provide a general "road" map for prioritizing and coordinating recreational development by government and private groups.

4. Develop a plan which each affected local jurisdiction and the State of Washington will adopt as part of their Park and Open Space Plan or other policy documents.

B. SUMMARY OF RECOMMENDATIONS BY RIVER SECTION

The Plan contains recommendations by type of recreational use, delineating in detail recommendations and priorities for action (see Section III, Plan Recommendations). These are summarized by section of the study area as follows:

1. Rich Road Crossing. A publicly-owned multiple use recreational facility should be provided near the Rich Road Bridge. Development should provide for a moderate level of rafting, launch/take-out, swimming and fishing uses.

2. Rich Road to Henderson Boulevard Reach

   a. Recognize conservation as the primary recreational objective of the relatively undeveloped Rich/Henderson Reach.

   b. Provide an additional rafting launch/take-out site with automobile access midway between Rich Road and Henderson Boulevard.

   c. Identify emergency take-out sites for rafters at an optimal interval of every two river hours.

d. Identify sites for foot-only access to the river for low intensity fishing and swimming use.

e. Encourage Thurston County to give appropriate recognition to the recreational value of this reach in comprehensive plan and zoning documents.

f. The sections of the Shoreline Master Program for the Thurston Region on recreational uses should be clarified to more accurately reflect appropriate levels and types of recreational development within the shoreline jurisdiction (see Section V, Chapter 4).

3. Henderson Boulevard Crossing. Provide a publicly-owned multiple use recreational site in the vicinity of the Henderson Boulevard bridge. Development should provide for a moderate level of rafting launch/take-out, swimming and fishing use.

4. Tumwater Valley Reach

a. As a long-term goal, pursue extension of the existing Capitol Lake path network into the Tumwater Valley to Henderson Boulevard.

b. Encourage continued access to and along the river for fishing.

c. The boundary between "Rural" and "Conservancy" Environments in the Shoreline Master Program should be moved approximately 1/4 mile upstream to Henderson Boulevard. This location more accurately reflects the distinct break in shoreline character which occurs at that point than the middle of the Tumwater Valley where the existing Rural/Conservancy boundary is now located.

5. Tumwater Falls Reach

a. Encourage continued public access to the Tumwater Falls Park for nature enjoyment and as the final rafting take-out destination for the Deschutes "Water Trail."

b. Link the existing pedestrian pathway along Capitol Lake to Capitol Way.

6. Capitol Lake Reach

a. Encourage continued fishing access at publicly- and privately-owned sites.

b. Boat access to Capitol Lake should be provided to enhance fishing and recreational boating.

c. Provide a looped trail on the east side of Capitol Lake.

d. Provide appropriate means for bicycle access from downtown Olympia to Tumwater Falls.

A. WHY A RECREATION PLAN IS NEEDED FOR THE LOWER DESCHUTES CORRIDOR

1. The Lower Deschutes Corridor contains a unique combination of distinct environments--lake, canyon, pastoral, and "natural"--in immediate proximity to the urbanizing area. This corridor has a significant role in the historical and current landscape of our area.

2. The corridor passes through four government jurisdictions--Thurston County, Tumwater, Olympia and the State of Washington. Coordination between these jurisdictions is needed.

3. Above Tumwater Falls Park virtually all river access and use is by trespass or informal use agreement over private property. Especially at sites with direct access by car, use conflicts and site degradation are ongoing problems. Public access is needed to take pressure off private land and to better serve recreation needs.

4. A plan for general public access, including handicapped access, is needed to complement informal use agreements and subdivision access.

   For the foreseeable future, we may be able to secure public access over private property by property owner consent. However, long-term protection of public access requires public ownership.

5. Guidelines are needed for private developers on public needs and desires regarding recreational use in the corridor, to guide actions when public access is offered or required by ordinance as part of development review.

6. Public access and use should protect natural resources, particularly the valuable anadromous fish spawning and rearing habitat.

B. APPROACH OF THE CORRIDOR STUDY TO PROVISION OF PUBLIC ACCESS

1. The corridor plan's evaluation of recreational opportunities in the Lower Deschutes Corridor is based on:

   a. Site suitability for types and levels of recreation (i.e., distance from public road, adjacent uses, sensitive resources, river and shoreline conditions).

   b. Regulations limiting or directing recreational development.

   c. Public safety.

d. Needs for public access to the river for recreation ranging from passive to active.

2. As they each serve different and valuable recreational needs, sites are provided for three types of public access:

   a. Automobile

   b. Foot

   c. "Water trail."

3. Sites are proposed for multiple recreational uses where possible, to concentrate expenditures of public funds and minimize use conflicts.

C. ADVISORY COMMITTEE MEMBERSHIP

The Deschutes Corridor Recreation Plan Advisory Committee was appointed by the Thurston Regional Planning Council to prepare a plan and recommendations for the Council's consideration. Membership of the Committee was designed to represent a broad range of government, civic group and property owner interests. Government agencies on the Committee represent resource protection, recreation and land use planning concerns. Representatives of citizen groups involved with historic preservation and city government were represented, as were owners of commercial, recreation, residential and resource lands in the corridor.

The Committee met approximately once every three weeks from January to June, reviewing background material prepared by staff and developing recommendations on the type and scale of recreational development needed in the corridor (see inside cover for list of membership).

A. FINDINGS AND RECOMMENDATIONS BY TYPE OF RECREATIONAL USE

1. Rafting and Boating

a. Recreational Value and Existing Use of Deschutes Corridor for Rafting and Boating. Rafting is a recreational activity from the Rich Road bridge to Tumwater Falls Park. While low summer flows and occasional log jams necessitate frequent walking by rafters, close proximity to the urban area and relatively mild summer-time water conditions make the river popular for rafting by all age groups in canoes, rafts and inner tubes. Fast winter flows and low summer water levels preclude use of larger trailered boats on the river. The undeveloped character of the corridor makes rafting especially attractive; rafting provides a unique access to the river "water trail" which is especially important given the limited number of road crossings in the study area.

In the past there have been organized inner tube races through the lower reach. The only organized floating trips through the upper reach are apparently those by the local Boy Scout troups who canoe from a park about three miles up river of Rich Road to Tumwater Falls Park. The river is also utilized by campers at Camp Solomon Shecter at Trails End Lake. The upper reach of the river (above Henderson Boulevard) is good canoeing water (estimated at Class 3), but suffers from a plethora of shifting log jams which have claimed many canoes though no lives. The lower reach of the river is very flat with no rapids and few hazards, other than those found on the golf course. Errant golf balls apparently do not present a hazard to river users due to the layout of the golf course. Only one fairway extends across the river, while three or four are parallel to it allowing some wandering tee shots to enter the river bed.

Boating is a popular past time on Capitol Lake where rafts, canoes, sail boards and small sail boats are a common site during spring, summer and fall. Sail boarding classes and rentals of sail boards are available. The lake is very popular for fishing during salmon and steelhead runs. Motorized craft are allowed only in the middle basin under rules established by the Director of General Administration. An exception is allowed during Capitol Lakefair in early July of each year, when hydroplane races, water skiing competitions, model boat races, and "bath tub races" take place.

Hand-carried craft can be launched at several locations on all three basins of Capitol Lake. However, there is currently no boat ramp for the lake.

b. Planning Issues

(1) Public Safety. In summer, the popular Rich-Henderson rafting run can take from 8 to 10 hours. Many rafters assume that the runs will be much quicker than is realistic. Stranded rafting parties are an annual occurrence. For 1984 and 1985, the Sheriff's Office logged 14 missing persons reports in the study area. Many sections of the river are relatively remote from public roads. Quickly dropping afternoon temperatures can catch rafters unprepared. Thurston County Parks Department prepares a brochure on rafting which includes a general description of the Deschutes. However, there are no signs at put-in sites to inform rafters of float times, hazards and proper preparation.

The public safety issue is heightened by the numerous unescorted junior high and high school floaters who use the river. The river's low summer flows and the quick travel time by auto to launch sites can give false impressions of rafting time and safety, particularly in the absence of signs for rafters.

(2) Limited Access to Rich-Henderson Reach. The popular Rich-Henderson rafting run is about six river miles long. There is no take out accessible to the public between Rich and Henderson, creating a potentially unsafe condition and limiting public access to this attractive section of the Deschutes "river trail." Parking at Rich and Henderson crossings is limited, with frequent violation of "No Parking" postings at peak use times especially on Henderson Boulevard.

Access for launch and take out at Rich and Henderson bridges is partially or wholly over private property; the street and bridge right-of-way at Rich Road provides limited publicly-owned access area. No easements or use agreements exist at these sites to secure permanent river access.

(3) Emergency Take Out. Sites providing emergency exit from the "river trail" are particularly important given the popularity of rafting by unescorted youths. Currently there is no signing or other provision for emergency take-out sites.

(4) Boating on Capitol Lake. Boat use of Capitol Lake includes small sail boats, canoes and row boats, and fishing, particularly during salmon and steelhead runs. In the past, ramps were available to allow launching of trailered boats. Only hand-carried boats can be launched currently. While this virtually eliminates noise and speed conflicts, the situation also precludes access for boaters with larger craft and could limit access for elderly or physically impaired fishermen and other boaters.

Noise and speed of power boats have caused conflicts in the past with residents and other boaters. In addition, logs and

debris from the Deschutes pose hazards for high-speed boat operation. Regulations of the Department of General Administration restrict power boats to the middle basin and prohibit water skiing, but there is no limit on speed or horsepower.

c. Rafting: Recreational Objective. Enhance "river trail" accessibility and safety by providing adequate launch take-out sites at appropriate intervals throughout the study area corridor.

Recommendation #1. Establish rafting launch/take-out sites at a maximum of approximately every five rafting hours on the lower river (roughly every four river miles). These would preferably be at sites developed for multipurpose recreational use, to concentrate expenditure of public funds and reduce conflicts with natural resources and property owners.

(1) Site Development Requirements

(a) Sites should be secured for public use by public ownership or property owner agreement. A minimum use area width of 30 feet on the river is preferred; 10 feet is the minimum usable site width.

(b) Auto access should come within close proximity to the river at launch sites (maximum 100 yards to parking).

(c) Signs are the key improvement needed for rafting sites. Signs should describe rafting time to next take out, safety preparations, and appropriate conduct for rafters.

(d) Bank stabilization and/or bank improvement at launch take-out sites may be warranted to avoid bank erosion.

(e) Other provisions which are preferable for high usage sites, optimally provided as part of a multipurpose recreational site, include:

1) Trash receptacles
2) Off-street parking
3) Picnic tables
4) Restrooms

(2) Location of Launch/Take-Out Sites. Launch/take-out facilities should be established at Rich Road and Henderson Boulevard, with an additional new site mid-way between these crossings. Tumwater Falls Park should continue to serve as the primary final take-out site.

(3) Implementation: Short-Term Action. Signs and trash cans for rafters should be provided at Rich Road bridge,

midway to Henderson Boulevard and near the Henderson Boulevard bridge. Public access should be secured by either public ownership or property owner agreement. Provision and maintenance of these sites could be a joint service club/local government project with the club providing labor to place and maintain signs and trash facilities.

The appropriate jurisdictions should identify sites and site development needs and contact service clubs and other organizations regarding their interest in "adopting" a rafting launch site on the Deschutes.

Easement agreements between the local government and property owners could be the lowest cost means to facilitate rafting access. Agreements would need to designate areas to be utilized, the type of use, "hold harmless" provisions, etc. to balance public access with property owner concerns. Property owners should also receive information on the Open Space Tax Program which could reduce property taxes for these sites.

Recommendation #2. Emergency raft take-out locations should be identified along the length of the lower river, preferably every two rafting hours (roughly every one and one-half to two river miles).

(1) Site Development Requirements

(a) Sites should be signed on the river to assist rafters to find a public road and telephone when an emergency take-out is needed.

(b) Emergency take-out sites should also be identifiable for Sheriff's Deputies, parents and others looking for overdue rafters, without encouraging intense use by the general public. At a minimum, a list of such sites should be maintained by the County's Emergency Dispatch Office.

(2) Implementation

(a) Short-Term Actions. Parks personnel should coordinate with Sheriff Deputies to contact property owners at likely sites, to secure access agreements, and to design and produce informational signs for rafters.

(b) Long-Term Actions. As the corridor develops, additional launch/take-out sites should be designated during development review and planning.

Recommendation #3. Boating access should be provided to enhance fishing and recreational boating on Capitol Lake.

(1) Site Development Requirements

(a) A moderate-sized facility is appropriate, as Capitol Lake is not suitable to a high number of boats. The facility should include a parking area for 10 to 20 cars and trailers which is under public ownership or by private property owner agreement.

(b) Informational signs on lake boating and safety are needed to inform boaters of use and speed regulations and potential water hazards. Restrooms and other facilities are available at existing parks.

(c) Suitable water depth should be available without continual dredging and sites should be located to minimize conflicts with existing uses.

(2) Location. A ramp was formerly located on the I-5 right-of-way directly north of the freeway fill adjacent to Tumwater Historical Park. This ramp has been closed for freeway construction (1986) and there are no plans to re-open it. Appropriateness of a ramp on the north basin is questionable as sedimentation from the Deschutes would pose ongoing water depth problems for boats. Also, the habitat value of the basin is very high and boat launch activity could conflict with habitat protection.

The potential ramp sites are:

(a) The south end of the parking lot at Olympia's Capitol Lake Park. Parking would be available on weekends on property currently leased from the State by the City. As power boating is only allowed in the middle basin, channels for passage to the middle basin would need to be established by the Department of General Administration to accommodate launching at this site.

(b) Near Marathon Park in the southwest corner of the middle basin. Parking here would need to be developed across the Deschutes Parkway, either on Burlington Northern property or on a parcel owned by General Administration formerly used for gravel extraction.

(3) Implementation

(a) Short-Term Action #1. The City of Olympia and the Department of General Administration should agree on (1) the type of access facility needed; (2) which department will be responsible for development and maintenance; (3) speed and/or power restrictions to limit use conflicts and increase boater safety; and (4) the appropriate site for a ramp and parking facility.

(b) Short-Term Action #2. Funding, design and construction of facility.

2. Swimming/Wading

a. Recreational Value and Existing Use of Deschutes for Swimming. The only formal swimming and wading area in the corridor is the Capitol Lake Park swimming area, which is heavily used when it is open and is maintained by the City of Olympia. In recent years it has been opened for only short periods due to poor water quality conditions. Unfortunately, the closures have coincided with the periods of warmest weather. Other informal areas have also proven to be very popular for these activities. These areas include the upper area of Tumwater Falls Park between the upper falls and Capitol Boulevard bridge, even though "no swimming" signs are posted; the Tumwater Valley Golf Club where swimming is tolerated but not condoned; and commonly used though privately-owned areas near the Henderson Boulevard and Rich Road bridges. Estimates of use range up to a high of 100 people at a time at each of these informal sites. In addition, there are other areas of semi-public access near housing developments, such as at Riverlea.

Water quality at the Lower Deschutes River usually meets state water quality standards for "swimmable" water. However, fecal coliform counts exceeding state standards have occasionally been recorded in the lower river (see Section V, Chapter 5). Despite summer flows falling below 100 cubic feet per second, suitable swimming holes exist at many locations. The river is also attractive for simple wading and related day use because of the natural setting and proximity to the urban area. Capitol Lake water quality is frequently unacceptable for swimming due to fecal pollution and/or low visibility due to algal blooms.

b. Planning Issues

(1) Absence of Legally-Established Sites for Swimming/Wading by the General Public in the Deschutes River. Despite the fact that water quality for swimming is generally good in the river and often unacceptable in Capitol Lake, the only official swimming area in the corridor is at Olympia's Capitol Lake Park. Swimming is prohibited at Tumwater Falls Park and at Tumwater Historical Park because of liability and safety concerns. Several privately-owned sites along the river receive substantial use, but use is either tolerated or opposed by property owners and no formal arrangements have been made to secure public access. Rich Road is, in part, an exception; a significant portion of the most intensely used site here is in the County right-of-way for the bridge.

Some property owners on the Deschutes allow public access by "tolerance" (i.e., as long as use is reasonable and does not conflict with property owner management and use, public access is informally allowed). Experience indicates that sites with well established "tolerance" access are generally used in a

responsible manner. Incidents have been observed of users actually "policing" other users to maintain responsible use. "Tolerance" use is and will remain an essential part of public access to the Deschutes.

However, users not familiar with these "informal" arrangements may not feel comfortable in trespassing to gain river access. Also, some property owners experience ongoing problems of littering and property destruction from undesired public use and desire to restrict the general public from uncontrolled access over their property to the river. Problems appear to be especially acute where cars can be driven directly to the river side.

(2) Lack of Facilities at River Swimming/Wading Sites. There are no facilities at the "informal" swimming/wading sites on the river. This can cause problems of littering and unsanitary waste disposal. In addition, the lack of facilities can limit access to physically impaired users and others who need or desire facilities.

(3) Water Quality Impact of Recreational Use. Increased recreation on the Deschutes, particularly water contact sports and riverside use, will cause water quality to degrade. Proper sanitary facilities can partially mitigate these impacts, but in general some water quality degradation may be expected as an unavoidable consequence of increasing public access.

c. Recreational Objective for Swimming/Wading. Enhance public access for swimming/wading in the corridor. Provide for a range of user needs and preferences regarding ease of access and level of facilities, while protecting natural resources, minimizing water quality degradation, and limiting conflicts with property owners.

Recommendation #1. Develop multipurpose site(s) on the river with good auto access and facilities for concentrated water play and day use, rafting launch/take-out and fishing access. To protect natural resources and limit use conflicts, the size of these facilities should be limited (i.e., by limiting parking to 25 spaces). Larger upland recreational development for playfields and other uses may be desirable adjacent or close to a river access site. Parking and intense active use areas for upland recreation development should be oriented away from the river to avoid conflicts with river resources and users.

(1) Site Development Requirements

(a) Public ownership of developed multipurpose recreation sites is needed to assure long-term access and encourage investment in facilities.

(b) Multipurpose sites should have parking within 100 yards of use area.

(c) Facilities for sanitary waste, trash and picnicking will be needed to accommodate the relatively intense use expected at these sites. Interpretative displays on river processes, history, etc. are desirable.

(d) River characteristics at multiple use sites should optimally include southwestern exposure, low bank composed of sands and gravel, moderate current, and good water depth.

(e) Multipurpose sites should be handicapped accessible.

(2) Location. Multipurpose recreation sites should be developed at or near the Rich Road and Henderson Boulevard bridges. These sites receive substantial existing use for both summer-time water recreation and year around fishing. They are the preferred sites based on historic use patterns and would have lower cost than locations which would require extensive road construction.

(3) Implementation

(a) Short-Term Action. Identify and secure multi-purpose recreation sites. Public ownership of multipurpose sites is needed to protect long-term public access and investment. The process of planning and funding recreational site purchase should be initiated as a priority action.

As site development could be assisted by service and user clubs, interested groups should be identified and brought into the planning process to build a strong commitment to joint development of these public recreational facilities.

(b) Long-Term Action. Site development with full facilities--restrooms, picnic, access enhancement, etc. The Parks Department or user groups could provide interim facilities such as trash pick-up pending funding of full development.

Recommendation #2. Identify and secure foot access sites for dispersed day use (these will also serve for fishing access sites).

(1) Site Development Requirements

(a) River access sites should generally be within 500 to 1,500 feet of parking.

(b) Access trails should be located where construction costs are minimal (i.e., moderate terrain and minimal occurrence of saturated soils) and where conflict with residents and other users can be minimized.

(c) Easements or other use agreements should be established with private property owners delineating trail easement location and width, liability, intended types of uses, etc. Minimum recommended width is 8 feet: A wider easement within which use is restricted to a narrower trail may be an option where the trail location is not surveyed.

(d) On- or off-street parking at the trail head should be available for approximately ten vehicles.

(e) Access should be identified either by sign or in a "user's guide" distributed by area parks agencies. The guide may be preferable if limiting use is a goal. The Sheriff should be informed of all trail easements for patrol and emergency response purposes.

(f) Trail construction should be adequate for handicapped access to at least some of the foot access sites.

(2) Location

(a) River frontage from the Tumwater Valley Golf Course downstream is already developed. Areas suitable for foot access include the Rich-Henderson Reach and immediately downstream from Henderson Boulevard.

(b) To minimize road construction, sites where the river is within 500 to 1,500 feet of existing public roads are most suitable. Particularly suitable are sites with road and river frontage in timber and other resource or open space use where conflicts with trail users would be reduced.

(3) Implementation. Formal provision of foot access sites is important in the long term but is not an immediate priority for recreational development in the corridor. Several privately-owned sites now provide foot access for fisherman and others to and along the river through property owners tolerance. This "tolerance" use will remain important and can continue to provide access in the immediate future.

(a) Short-Term Action. Property owners should be informed of public policies supporting foot access to the Deschutes and encouraged to enroll in Open Space Tax Program as an immediate and revocable means to receive compensation for providing the public benefit of access.

(b) Long-Term Action. Begin identifying especially suitable sites and initiate contact with property

owners regarding easements and other means to assure access.

3. Fishing

a. Value and Use of Deschutes for Recreational Fishing. A very popular fishery exists for coho salmon, steelhead and cutthroat trout which are all found in some abundance in the Deschutes River. The Deschutes Corridor offers a variety of fishing experiences, from "sociable" fishing at intensely used sites to solo use of remote areas. Salmon, sea run cutthroat and steelhead fishing is conducted from boats in Capitol Lake or from the shore along the lake to just below the lower falls at Tumwater Historical Park. Many steelhead are caught near the old brewery. Access to these lake areas is very good since most of the lake shoreline is publicly owned. Fishing is also popular above the falls to the golf course up to Henderson Boulevard, at and above the Rich Road bridge and at many other locations through the study area. Many fisherman park their vehicles at the brewery recycling center parking lot at the "E" Street bridge, in the golf course parking lot, and along the road at 58th Avenue SE off of Henderson Boulevard. At the latter location, many fisherman walk up river along an abandoned road which is signed "no trespassing" to reach the river. Parking is also a problem at Rich Road, where constant use has damaged an adjacent field which is now criss-crossed with rutted roads.

Above the falls, there are native cutthroat trout. There are also some perch caught from Capitol Lake where resident trout cannot survive due to the tidal flushing action. Angler studies to determine fishing visits and success rates have not been performed within the corridor, although the Department of Game is initiating studies of the cutthroat trout resource (1986). Fishing for various species extends year around except for March and April closures for steelhead spawning. Percival Cove and the Deschutes River from the Capitol Boulevard bridge to 400 feet below the Tumwater Falls fish ladder are closed to fishing.

Three unique fishing facilities exist within the corridor. These are the fish ladder and salmon capture facility at the mouth of the Deschutes River on 5th Avenue, the Percival Cove fish rearing pond on the west side of the Deschutes Parkway, and the fish ladders at Tumwater Falls. Each of these facilities has unique construction, use and management features, and they have become magnets for curious visitors whenever they are in use, although the fisheries agencies have not publicized the Percival Cove and 5th Avenue facilities.

b. Planning Issues

(1) Inadequate parking at existing access sites at Henderson Boulevard and Rich Road. Especially at Rich Road, substantial rutting has occurred in a field used for access and parking.

(2) Lack of fishing easements or other permanent provision makes access vulnerable to cut off due to development or landowner action. Fishing use tolerated by private property owners is highly important for fisherman. Fisherman generally have a good reputation among property owners and there is a high tolerance of fishing access, whether concentrated steelhead fishing at the old brewery or "E" Street bridge, or dispersed fishing along many sections of the Rich-Henderson reach. However, there are currently no formal fishing easements in the study area.

(3) Lack of visibility regarding fishery resource of the river, particularly the lack of interpretive information at the 5th Avenue, and Percival Cove fisheries facilities. The fisheries agencies have missed an opportunity to construct interpretive centers which could both inform the viewing public and project a positive image of fishery resource activities.

c. Fishing: Recreational Objective. Continue to provide various levels of accessibility for fishing to and along the Lower Deschutes Corridor.

Recommendation #1. Provide access for fairly concentrated levels of fishing in conjunction with multipurpose recreational developments proposed at Henderson Boulevard and Rich Road (see Swimming/Wading Recommendation #1).

Recommendation #2. Encourage foot access for fishing to and along suitable sections of the river via fishing easements and other mechanisms (see Swimming/Wading Recommendation #2).

Recommendation #3. Continue lake fishing access at Tumwater Historical Park, Capitol Lake Interpretive Park, Marathon Park and other sites.

Recommendation #4. Boat access to Capitol Lake should be provided to enhance fishing (see Rafting and Boating Recommendation #3).

Recommendation #5. Provide interpretive signs identifying the fishery facilities at the 5th Avenue bridge, Percival Cove and Tumwater Falls.

(a) Implementation: Short-Term Action. The Department of Fisheries should initiate contact with the appropriate jurisdiction to coordinate sign design and placement.

4. Conservation

a. Recreational Value of Conservation. Passive enjoyment of the undeveloped "natural" sections of the corridor is a valuable recreational use, compatible with protection of important fisheries resources and wildlife habitat. Opportunities are enhanced by the fact that extensive sections of the river, especially the

Rich-Henderson reach, are in forest cover or pastoral agricultural uses. Also, development of the immediate shoreline along the corridor is generally limited by floodway designation, the Shoreline Master Program, and in some sections of Tumwater by zoning.

The "water trail" from Rich Road to Tumwater Falls Park provides excellent access for passive nature enjoyment. This is a popular activity with existing runs from Rich to Henderson and Henderson to the Tumwater Falls area.

b. Planning Issues

(1) The Thurston County Comprehensive Plan and Zoning Ordinance does not adequately recognize the corridor's recreational and natural resource value. Existing zoning would allow from four to eight dwelling units per acre in some locations along the corridor. This density would not be compatible with resource protection.

(2) Public access for both "water trail" and foot access into the Rich- Henderson reach is lacking.

c. Objective. Encourage conservation of appropriate sections of the river to ensure that the natural beauty, fisheries resources and wildlife habitat of the area are available for future generations.

Recommendation #1. Make conservation the primary recreational objective of the Rich-Henderson reach.

Implementation: Short-Term Action. Thurston County should be urged to recognize the Deschutes as a significant natural resource in its Comprehensive Plan and zoning designations. This action is needed to enhance protection of the corridor and provide compatibility between Shoreline Master Program designations, Tumwater zoning and County zoning.

Recommendation #2. Rafting put-in/take-out sites and foot trail access in the Rich-Henderson reach should be at a frequency and level of development compatible with resource conservation. Multiple public road access locations should not be encouraged.

5. Corridor Trail System

a. Recreational Value and Use of Trail Systems in the Corridor. A fairly extensive and very popular foot path network exists around Capitol Lake. Paved and graveled walkways and foot paths surround most of Capitol Lake, and the area draws literally hundreds of walkers, joggers, and bicyclers daily at all times of the year. The west side of the lake has paths from 5th Avenue bridge all the way up to the Tumwater Historical Park. Tumwater Falls Park has a trail network in the scenic and historic Tumwater Falls canyon. It is estimated that approximately 430,000 visitors

visitors visit this park each year. No paths exist above Tumwater Falls Park, although bicyclers and joggers can use the bicycle route along the road leading into the Tumwater Falls golf course. Above the golf course there are no roads adjacent to the river or paralleling the river corridor.

Parking, restroom and picnic facilities exist at various parks around the lake and at Tumwater Falls Park, enhancing trail use.

Public investment in Percival Landing and efforts to revitalize downtown and Olympia's waterfront area increase the attractiveness of enhancing non-motorized access into the adjacent Capitol Lake Deschutes corridor. Trail systems serving walkers, joggers, bicyclers and equistrians have proven very popular in other localities in Western Washington, particularly along river corridors or lake shores. Such a trail extending from Percival Landing along Capitol Lake and through the Tumwater Valley could be a significant recreational asset for the region. In the Tumwater Valley, major obstacles to such a trail include potential conflicts with existing brewery and golf course uses; topography is fairly flat and extensive site work would generally not be necessary. Above Henderson Boulevard, rough terrain and remote location could make extension of a multipurpose trail facility more difficult. In the Rich-Henderson reach, such as a trail could also conflict with fisheries and wildlife habitat conservation.

b. Planning Issues

(1) Extending a trail above Tumwater Falls into the Tumwater Valley could conflict with existing brewery and golf course uses. However, a multipurpose trail facility would have high recreational value for joggers, walkers and bicyclists. Such a trail would not necessarily be directly adjacent to the river, but could provide river access at some location.

(2) The Tumwater Falls trail system is valuable for passive nature enjoyment; linking this trail to the Capitol Lake network would encourage "through" traffic by joggers and other hikers which could disrupt established use of the Tumwater Falls trail.

(3) A trail on the east side of Capitol Lake would be a desirable linkage; however, such a trail would cross numerous properties and may have topographical constraints to its construction.

(4) Jogging and bicycling is increasing in popularity in general and around Capitol Lake and the Deschutes Way sidewalk and road shoulders in particular. However, the Deschutes Parkway beyond the I-5 overpass is now hazardous to all non-motorized traffic and may be worse after freeway widening. Sidewalks are not included in the roadway design for the freeway expansion and on-ramp revision.

c. Recreational Objective. Provide means for non-vehicular access (foot and bike) along the Deschutes Corridor.

Recommendation #1. Establish a pedestrian loop trail on the east side of Capitol Lake from Tumwater Historical Park to Capitol Lake Park in Olympia.

(1) Implementation

(a) Short-Term Action. City of Olympia and the Department of General Administration should coordinate exploration of topographic and property owner constraints and feasibility of developing an east shore trail.

(b) Long-Term Action. Funding and construction of trail if found to be feasible and desirable.

Recommendation #2. Link the pedestrian pathway along Deschutes Way (which now ends at the Crosby House) to Capitol Way.

(1) Location. Directly linking the Tumwater Falls Park trail system to the Capitol Lake pathway is not recommended as additional points of access could threaten the unique nature of the scenic falls trails. Right-of-way for Deschutes Way is limited. However, there is level area on the east side of Deschutes Way between the Crosby House and the Old Custer Way bridge, which could serve as a safe and suitable pedestrian pathway. This location could avoid conflicts with the Falls Canyon trail while providing a safe pathway for joggers and walkers who now must use the busy and narrow roadway.

(2) Implementation

(a) Short-Term Action. The City of Tumwater and Olympia-Tumwater Foundation should work together to provide a pathway from the Crosby House to Old Custer Way.

(b) Long-Term Action. Extend a pathway past the Old Custer Way bridge to Capitol Way.

Recommendation #3. Provide appropriate means for bicycle access along the Lower Deschutes Corridor from downtown Olympia to Tumwater Falls.

Recommendation #4. As a long-term goal, extension of the existing trail system into the Tumwater Valley to Henderson Boulevard should be pursued.

B. CHARTS OF SITE DEVELOPMENT REQUIREMENTS

	LOW USAGE	MEDIUM USAGE	HIGH USAGE
I. SWIMMING/WADING			
A. Parking	None designated; informal, off-street available	Paved/gravel parking for 5-10 vehicles[1]	Paved parking for up to 25 vehicles
B. Facilities	None	Picnic tables, garbage cans	Restrooms, interpretive displays, drinking fountains
II. TRAILS (Jogging, Hiking, Equestrian, Bicycling)			
A. Parking	None	Paved/gravel parking for less than 5 vehicles at key access points[1]	Paved parking for 5+ vehicles at key points
B. Width of Trail	4' path (native material)	8' soft surface	8'-12' hard surface (DOT Class 1 Standard) plus 4'-8' soft surface
C. Facilities	None (other than developed trail)	Picnic tables at intermittent locations, trash cans	Handicapped access, interpretive signs, restrooms and resting areas at key points
III. SMALL BOAT LAUNCH/RECOVERY (Hand Carried)			
A. Parking	None designated; informal off-street	Paved/gravel parking for 5+ vehicles[1]	Paved parking for lot vehicles
B. Facilities	Minimal clearing for launch site	Signs, bank stabilization	Picnic tables, restrooms, trash cans
IV. IMPROVED BOAT LAUNCH/RECOVERY (RAMP)			
A. Parking	Gravel area near ramp, easement for use	Room for roughly 10-20 car and trailer spaces	
B. Facilities		Restrooms, informational signs	High usage ramp not suitable for planning area

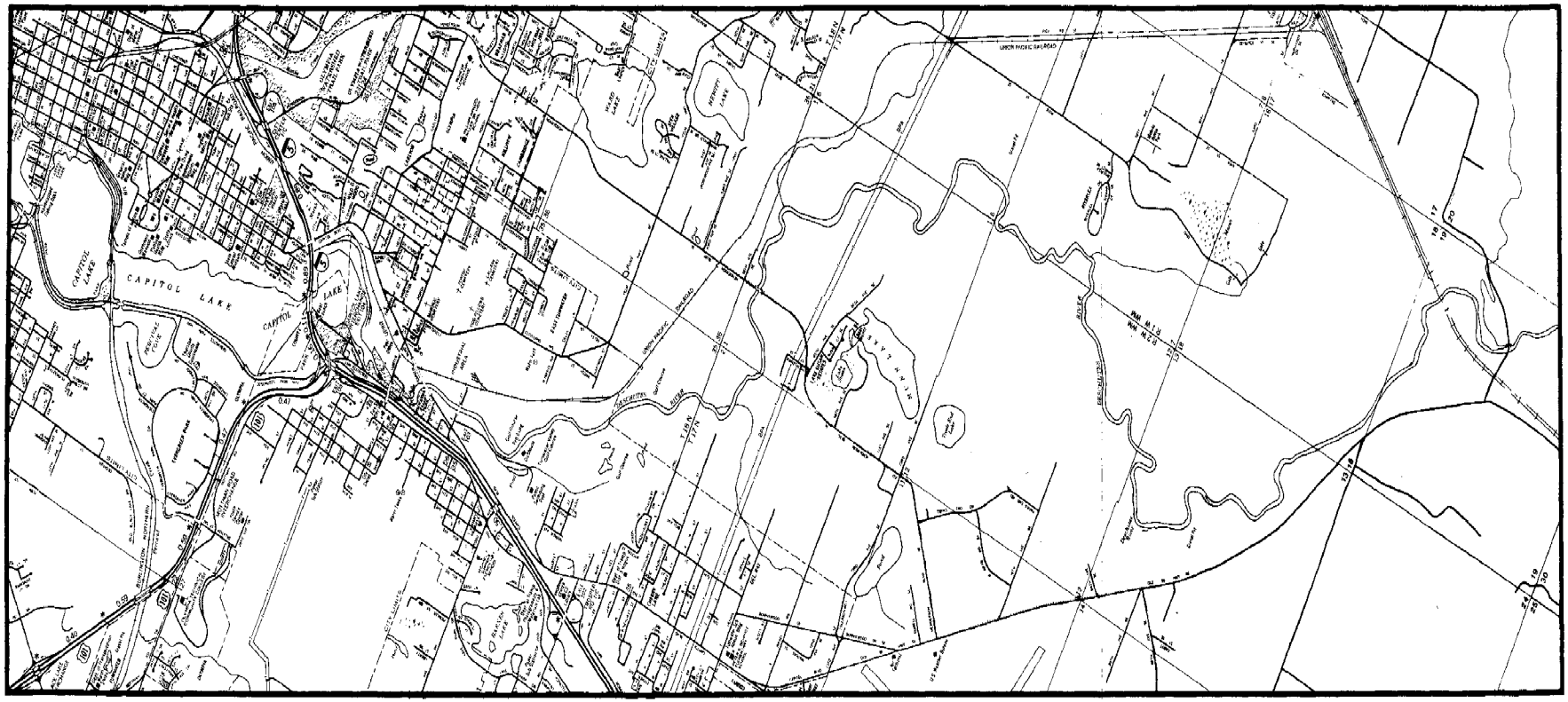
[1]Paving of parking required within urban area (as designated by Board of Thurston County Commissioners)

SITE CHARACTERISTICS FOR RECREATIONAL USES

	OPTIMUM	MINIMUM	UNACCEPTABLE
I. SWIMMING/WADING			
A. Bank height	Low bank profile	--	High/unstable
B. Soil type	Gravel/loam	clay/loam	Saturated mineral or organic soils
C. Exposure	Southern/western	Other	--
D. Distance to parking	Adjacent	100 yards to 1/4 mile	Less than 1/4 mile
E. River current	Moderate--inner bank of a meander	--	High velocity--outside bank of a meander
F. Ownership	Public-owned or permanent easement	Temporary or limited use/access agreement	No public easement or ownership

II.	TRAILS (Jogging, Hiking, Equestrian)			
A.	Gravelly/sandy loams	Silt loams, short sections of saturated soils	Saturated organic or mineral soils	
B.	Slope	5%	5-10%	10%
C.	Terrain	Flat	Gradual rise/fall	Rough, uneven terrain
D.	Ownership	Public or permanent easement	--	Lack of easement
E.	Natural resource	Some distance or buffered from spawning & rearing areas/wildlife habitat	Not directly adjacent to significant wildlife habitat/spawning & rearing areas	--
F.	Flood Hazard	Outside floodway	Within stable section of floodway and low profile trail (minimum of fill)	Unstable section of floodway or high profile trail
G.	Width of trail Easement[1]	20'	16'	Less than 16'
H.	Emergency access	Access points every 1/4 mile	Access points every 1/2 mile	No access points
I.	Vertical Clearance	10'	8'	Less than 8'
III.	SMALL BOAT LAUNCH/RECOVERY (Hand Carried)			
A.	Width of launch/ recovery use area	30'	10'	10'
B.	Distance from river to parking	Direct access	100 yards	100 yards
C.	Ownership	Public ownership or permanent easement	Temporary or limited use agreement	No agreement/easement/ ownership
D.	Bank height	--	--	--
E.	Soil type	Gravelly loam	--	Saturated clay, organic
F.	River current	Moderate velocity, inner bank of meander	--	Outside of meander in high velocity area
G.	River travel time between launch/recovery sites	2 hours	2-5 hours	¶ 5 hours
H.	Bank stability	Stable banks, outside braided zone	low-bank meander section	Eroding bank
IV.	IMPROVED BOAT LAUNCH/RECOVERY (RAMP) -- CAPITAL LAKE ONLY			
A.	Width of water	100'	30'	30'
B.	Ownership	Public ownership	Permanent easement	No public ownership or permanent easement
C.	Bank height	Low bank	--	Steep or high bank
D.	Soil type	Gravelly loam	--	Saturated organic or clay soils

[1] King County has 50' minimum width to allow meanders, buffering, facilities, etc.



Study Area

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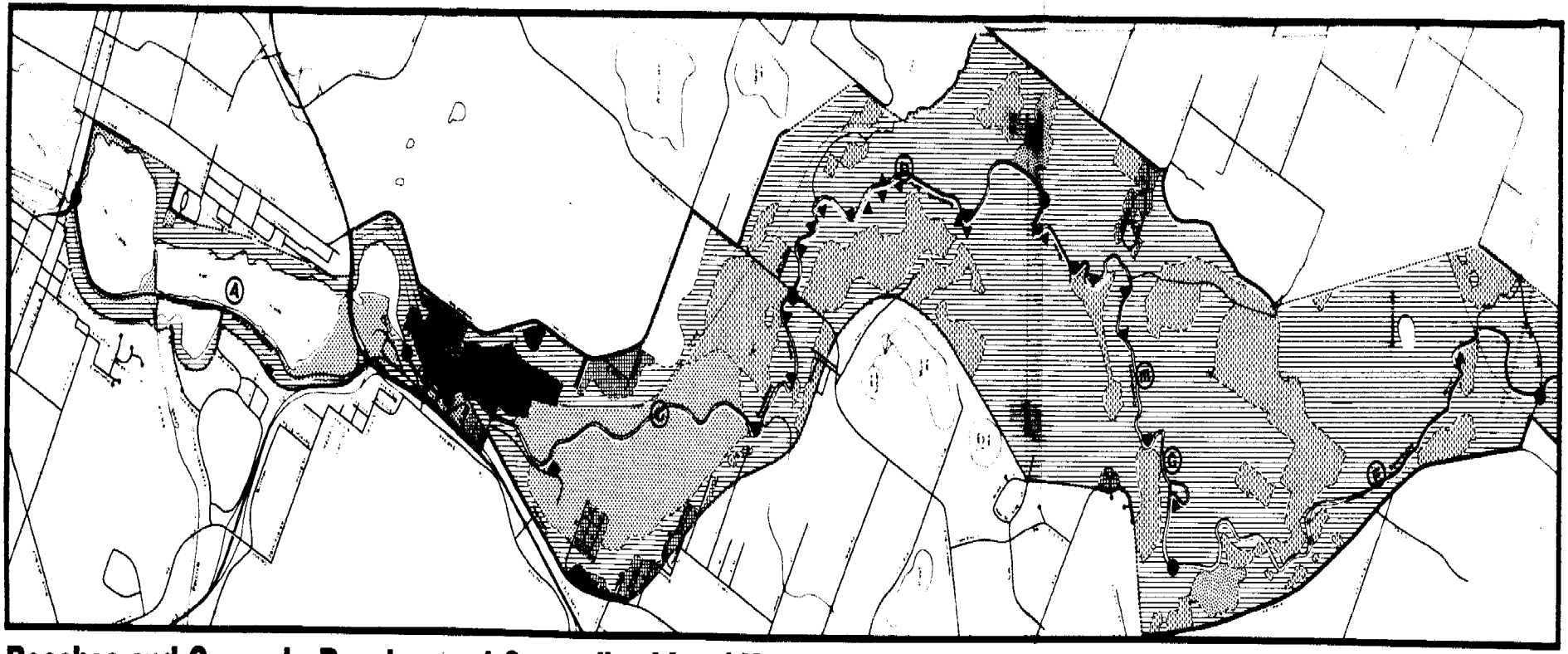
Deschutes Corridor Recreation Plan

Thurston Regional Planning Council, 1986.

MAP 1



Reaches and General Reaches and Generalized Land Use

- Parks & Recreation (Developed)
- Forest & Shrubs
- Agriculture
- Gravel Extraction
- Residential
- Commercial & Industrial
- Gravel Bars
- Reaches & Runs

- (A) Capitol Lake Reach
- (B) Tumwater Falls Reach
- (C) Tumwater Valley Reach
- (G) Henderson Blvd/Rich Road Reach (D,E,F combined)
- (D) Henderson Blvd Run
- (E) Old Stage Road Run
- (F) Upper Pastoral Run

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Deschutes Corridor Recreation Plan

Thurston Regional Planning Council, 1986.

MAP 2

Public Ownerships

Public Ownerships (city,county,state)

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Deschutes Corridor Recreation Plan

Thurston Regional Planning Council, 1986.

MAP 3

Constraints and Opportunities: Auto Access

A/B. Capitol Lake Park and Marathon Park. Parking and full facilities available at both parks. Swimming use limited due to water quality problems. Fishing bridge at Marathon. Recommendation: Enhance boat access at one or both parks.

C. Interpretive Park. Display on lake processes and inhabitants. Restrooms available. Pathway linkage under freeway to Historical Park.

D. Tumwater Historical Park. Full facilities. Concentrated fishing area. Swimming prohibited due to hazards.

E. Tumwater Falls Park. Foundation-operated. Full facilities. Scenic trail in canyon. No fishing and swimming in park. Recommendation: Continue public access.

F. "E" Street Bridge and Vicinity. Substantial use for fishing. Parking on private property. Recommendation: Encourage fishing easements and Open Space Tax enrollment to compensate for public access.

G. Henderson Boulevard Bridge Vicinity. Substantial swimming, fishing and rafting use. Nearly entire use area is privately owned. Parking limited, with frequent peak season violations of "no parking" regulations on Henderson Boulevard. No facilities. Recommendation: Develop a publicly-owned site for swimming, fishing and rafting. May include adjoining but separate active recreation area.

H. Rich Road/Henderson Boulevard Reach. Limited existing road access in this area. High natural resource and habitat value. Recommendations: (1) Add new auto access site for additional raft launch/take-out (see Water Trail map). (2) Designate conservation as primary recreational objective in this reach.

I. Rich Road Bridge Vicinity. Year-round use for fishing, swimming and rafting. County right-of-way partially encompasses a primary use area. Some on-street parking. No other facilities. Recommendation: Develop a publicy-owned site for multiple recreational uses. May include interim provision of trash facilities and rafting information, with service or user club involvement in site development.

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Deschutes Corridor Recreation Plan

Thurston Regional Planning Council, 1986.

MAP 4

Constraints and Opportunities: Foot Access

A. Capitol Lake Foot Paths. A network of foot paths on the west shore extend along the lake to Tumwater Historical Park. Recommendations: (1) Develop a loop trail along the east side of Capitol Lake. (2) Extend the foot path along Deschutes Way from the Henderson House to Tumwater Falls Park and Capitol Way.

B. Tumwater Valley. No trail system exists in the valley beyond a bikeway to the athletic club area. Recommendation: As a long-term goal, extension of the existing corridor trail system to Henderson Boulevard should be pursued.

C. Rich/Henderson Reach. Old 99 and Rixie Road roughly parallel the river on the west and east. While these and other road frontages include possible locations for foot access, residences and commercial uses are gradually eliminating undeveloped sections along these roads.

Recommendation: Provide several foot access- only sites along this reach for dispersed swimming, fishing and nature enjoyment. Trails and use areas should be secured by easements or other property owner agreements. Most likely are sites where the river runs close to existing public roads, and old road grades or gentle topography provide reasonable access to the river.

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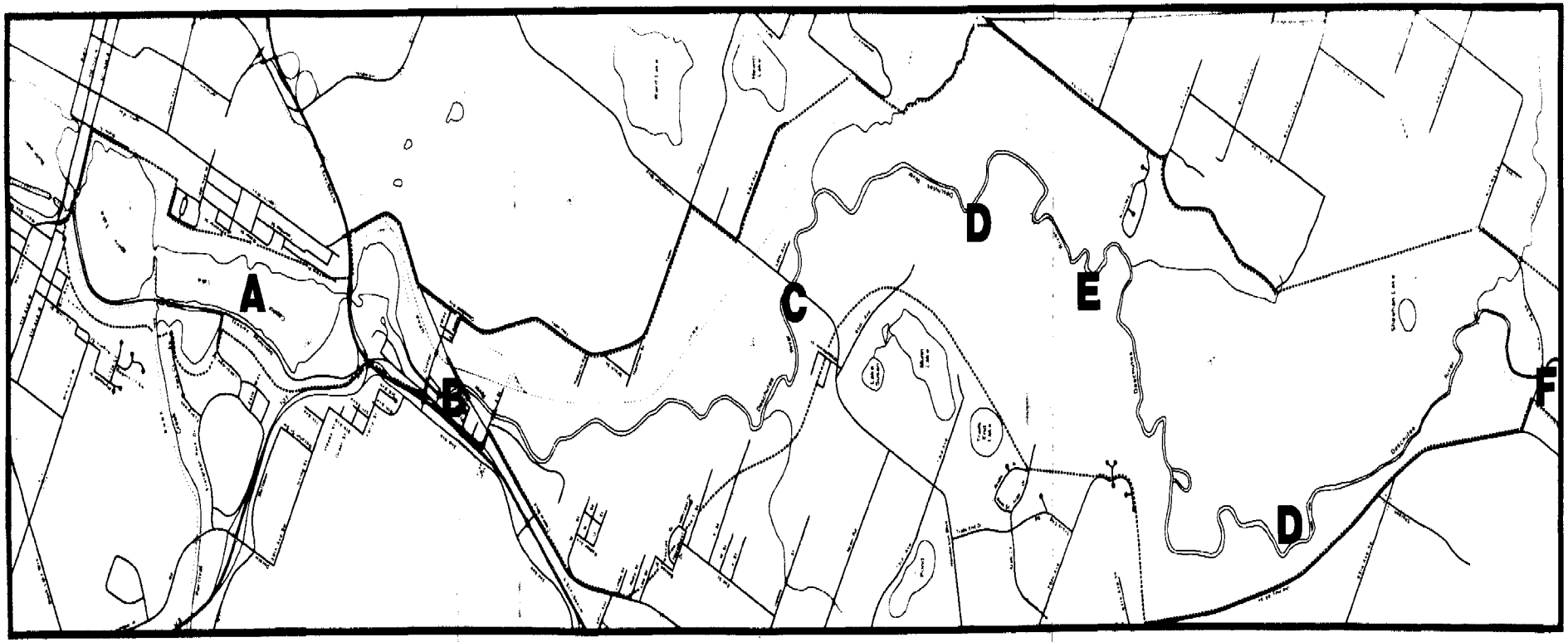
Deschutes Corridor Recreation Plan

Thurston Regional Planning Council, 1986.

MAP 5



Constraints and Opportunities: "Water Trail" Access

A. Capitol Lake. Boating on Capitol Lake includes sailing, fishing and rowing. Hand-carried boats can be launched at several locations. Power boats are allowed on the middle basin but no ramp exists on the lake. Recommendation: Enhance boat access to Capitol Lake. Likely sites for a facility include Capitol Lake Park and Marathon Park.

B. Tumwater Falls Park. The park serves as the final take-out for rafting the lower Deschutes "water trail." Recommendation: Encourage continued public access to the Foundation-operated park.

C. Henderson Boulevard. The area around the bridge is used as take-out for Rich Road run, and as launch site for the shorter Tumwater Falls Park run. Recommendation: Provide launch/take-out site, preferably as part of multiple-use recreational facility.

D. Emergency Take-Out Points. Each year rafters become stranded on the roughly eight-hour Rich/Henderson run. Recommendation: Emergency exit points should be provided along the "river trail" every two rafting hours (about 1 1/2 to 2 river miles).

E. Additional Launch Site. "River trail" safety and access are limited by the absence of suitable launch/take-out sites between Rich Road and Henderson Boulevard. Recommendation: Establish a new launch/take-out site including parking roughly midway in this run.

F. Rich Road. Under the bridge is a commonly-used launch/take-out site. Recommendation: Provide raft launch/take-out sites, preferably as part of a multipurpose recreational facility. Informational signs for rafters are the priority need. These could be provided prior to full site development.

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Deschutes Corridor Recreation Plan

Thurston Regional Planning Council, 1986.

MAP 6

Existing and Recommended Recreational Facilities

- Rafting Launch/Take-out
- Swimming
- Fishing
- Foot Trails
- Motorboating
- Sailing
- Recommended
- Restrooms/Picnic Facilities
- Boat Launch
- Parking

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Deschutes Corridor Recreation Plan

Thurston Regional Planning Council, 1986.

MAP 7

8. Other Maps

A series of working maps at 1"=400' were prepared for this study. These inventory maps are available for viewing at the Thurston Regional Planning Council office. The 1"=400' series maps are on three panels.

Working maps at 1"400' (three panels for study area) available for viewing:

a. Habitat types (from WDOG "Westside HABREL" Classification)
b. Fish habitat
c. Land use
4. Property ownerships
5. Historical and archaeological sites (Tumwater area)
6. Soils
7. Zoning
8. Contours

Other working maps available for review are:

a. Capitol Lake Area Public Ownerships (1"=200')
b. Tumwater Falls Area Ownerships and Contours (1"=100')

Color overlay maps were prepared of several key features. These are also available for viewing or presentation. Maps are at 1"=400', three panels for the study area. Features in the overlay series are:

a. Public ownerships
b. Gravel bars
c. Armored banks
d. Flood plain (FEMA)
e. Floodway (FEMA)
f. Commercial land uses
g. Significant eroding banks (exceeding 3 feet per year or exceeding 30 feet in height)
h. Wetlands
i. Wet winter soils.

A. RIVER GEO-HYDROLOGY

1. Basin Geography

The Deschutes River basin is exceptionally long and narrow, running for 57 river miles with an average watershed width of only 5 miles. Headwaters are in the Bald Hills of Southern Thurston County and the northern edge of Lewis County at about 3,500 feet in elevation. While numerous small creeks enter the river, there are no tributaries with significant flows.

Geologically, the lower reaches of the Deschutes are comprised mainly of unconsolidated glacial outwash from the Vashon glaciation. Pothole lakes and Mima Mounds in the basin are also evidence of this glacial heritage. Soil types below the headwaters are mainly Alderwood/Everett and Spanaway/Nisqually series. High porosity over much of the basin results in relatively little overland flow, with rapid percolation into the soil and subsequently into extensive aquifers.

While the upper reach of the river has a fairly steep gradient, the remainder of the Deschutes has a relatively gentle gradient compared to other Western Washington rivers. After dropping over 1,000 feet at its first 5 miles, the river slows in the next 10 miles to about 500 feet in descent and then completes the final drop of roughly 500 feet to Budd Inlet over the remaining 30 river miles.

The study areas initial section, termed the Upper Pastoral Run, extends from Rich Road to near the old stage crossing at about river mile 8. This section is classified as a "pastoral" geohydraulic zone (for defition of terms, see Attachment 1; runs are shown on Map 2. Here, the river has a very low gradient and is in a defined relatively deep channel. Banks are generally fairly stable and usually contain a high percentage of fines (silts, sands and clays). Below this run, beginning roughly where the river veers northeast away from Old 99, the river enters a "gravel beach" geohydraulic zone. A somewhat steeper gradient is found, along with a series of meanders where the river has shifted location considerably over time. Erosion sites in this Old Stage Crossing/Boe Gravel Run are more numerous and tend to have faster recession rates and higher volumes of sediment production than in the more gradual Upper Pastoral Run. An example of channel change in this run is the oxbow lake created in the past winter where the river cut through a narrow acute meander just south of the Trails End area.

Near the Boe gravel extraction site at roughly river mile 6, an erosion site produced large volumes of sediment in the past which included a relatively high percentage of coarse materials. These coarse materials, in particular, have loaded the river channel below this point with a large quantity of sediment. The coarser materials are now beginning to appear in the upper basin of Capitol Lake.[2] In the Boe Gravel/

Henderson run, this loading of the river channel has produced extensive gravel bars and a rapidly shifting river channel.

Below Henderson, the river slows to a low gradient as a "pastoral" zone. The river's banks are stabilized from the beginning of the Tumwater Valley Golf Course (approximately river mile 4) to the Tumwater Falls. In this area there are few significant erosion sites.

The Tumwater Falls canyon is a distinct and notable geological feature in the study area. The canyon is classified as a "boulder" geohydraulic zone.

Below the falls, Capitol Lake is somewhat in a "neither fish nor fowl" category. The lake was created in 1951 by the impoundment of the Deschutes River and Percival Creek estuaries and the shallow southern end of Budd Inlet. Due to Capitol Lake's unique location and management activities, it has characteristics of several types of water bodies. It has characteristics of an estuary, especially in the mid-channel islands and shallow water of the upper basin. It has the open water of a lake, but frequent intentional and inadvertent saltwater intrusion makes the water brackish in extensive sections of the lake.

Heavy sedimentation from the Deschutes and Percival Creek into their former estuaries creates ongoing management problems for the Department of General Administration. The saltwater/freshwater interchange at the lake is a factor in lake water quality problems as well as lake management solutions (see Chapter E, Water Quality).

2. Stream Flow

The low-elevation headwaters of the Deschutes have no summer snow pack and little winter accumulation. Thus, rainfall is a dominant factor affecting Deschutes River stream flow. The resulting stream flow pattern is high winter flows (mean flows approaching 1,000 cubic feet per second in the peak month of December) and low summer flows fed primarily by ground water discharge (base flows of roughly 100 cubic feet per second).[1]

Rainfall-event triggered flooding can occur at any time between December and March.[1] Peak discharge on the lower Deschutes was about 8,500 cubic feet per second in 1974.[2] This flood was used to estimate the elevation of the 100-year flood.[2] Extensive areas are included in the Flood Plain and Floodway zones defined by the Federal Emergency Management Administration.

The widely-ranging seasonal flows of the Deschutes have important implications for recreation. Siltation has major impacts on Capitol Lake and on spawning gravels in the river. Boating is made dangerous in winter and inconvenient in summer on the Deschutes. Extensive gravel bars are exposed in summer in some areas. While these are prime summer recreation areas, instable channel location may make it difficult to provide permanent shoreline recreational facilities. The land between the high and low annual flows may be found to be owned by the State of Washington with resulting major implications for public recreation (see Chapter F, Public Rights to Access).

[1]Deschutes River Basin Instream Resources Protection Program (June 1980), State of Washington, Department of Ecology.

[2]Flood Insurance Study, Thurston County (April 1984), Federal Emergency Management Agency.

[3]Stream Corridor Management Plan for the Deschutes River (January 1984), Richard MacNicholas, Thurston County Conservation District.

[4]Conversation with Paul Ludwig, Soil Conservation Service.

Attachment

1. Geo-hydraulic river zone classification.

ATTACHMENT 1

Geo-Hydraulic River Zone Classification

Estuarine Zone I. This zone is characterized by a zero gradient stream course which is directly affected by tidal actions in the receiving estuary. The upper limit of the Estuarine Zone is the limit of tidal influence. Estuarine Zones are typically characterized by wide, flat valleys and branched stream courses. The bed material is generally fine sands and silts often visible along the shoreline as mud or ooze.

Pastoral Zone II. The Pastoral Zone is characterized by a gradient of 0 to 5 feet per mile and a fairly wide, flat, flood plain valley in which the river meanders in wide loops. The bed material is generally sands and silts.

Gravel Beach Zone III. The Gravel Beach Zone has a gradient of 5 to 25 feet per mile, is often found in narrower valleys, has a bed of gravel and cobbles, and often is characterized by a braided channel. The Gravel Beach Zone also can be distinguished by its numerous sand bars and islands.

Boulder/Cobble Zone IV. The Boulder/Cobble Zone has a fixed stream course, a narrow steep-sided valley, and a gradient of more than 25 feet per mile. Its bed is characterized by boulders where gradients exceed 50 feet per mile and cobbles between 50 to 65 feet per mile. Boulder/Cobble Zone streams are typically very fast-rushing streams which transport finer sediments to lower segments of the stream course.

B. EXISTING USES

1. Land Uses in the Corridor

The Lower Deschutes Corridor extends from the heart of Olympia and Washington State Capitol grounds to relatively remote and undeveloped sections of the river. Beginning at Capitol Lake, land uses on the immediate lake shore are mainly recreational and open space in nature. Much of the lake shore is publicly owned, with developed recreational facilities at Capitol Lake Park, Marathon Park, Capitol Lake Interpretive Park, and Tumwater Historical Park. The steep slopes surrounding the lake are largely undeveloped. Existing regulation of privately-owned lands through the Olympia Zoning Ordinance generally protects these slopes from clearing and development.

The I-5 crossing of Capitol Lake is a major land use in this reach and has impacts of noise and visual obstruction.

The Tumwater Falls canyon is in private ownership of the Olympia-Tumwater Foundation, but is open to the public as a preserve for passive recreation use and relaxation. At and above the Capitol Way bridge, the Pabst Brewery occupies the east side of the river. Above the brewery, the 220-acre, 18-hole Tumwater Valley Golf Course occupies essentially the entire valley floor. The Golf Course and the Tumwater Valley Racquet Club are privately-owned facilities available to the public for a fee. On the west side of the valley a subdivision occupies part of the valley floor in the Palermo Avenue vicinity. A City of Tumwater tot lot is adjacent to the subdivision as well as an undeveloped 20-acre city watershed parcel. Between the golf course and Henderson Boulevard, several undeveloped properties are in transition from pastoral agricultural uses to other uses. Steep and fairly high banks exist on both sides of the valley.

Above Henderson Boulevard, the character of the corridor changes from the open pastoral Tumwater Valley to a mix of second growth woods and cleared fields. Directly above Henderson Boulevard a small residential subdivision is located in the floodway of the river along 58th Avenue. A former gravel extraction site beyond the end of 58th Avenue is a popular, though not sanctioned, recreation area accessible by foot or bicycle. The river valley above this point is occupied by scattered fields largely used for hay where soil and topographic conditions permit, surrounded by dense second growth woods. The Boe sand and gravel operation is located on the east side of the river off Rixie Road. Nearly across from this site is property which is part of the Camp Solomon Schecter, a camp cooperatively operated by several northwest Jewish congregations. The camp's river property is used intermittently for day recreation and occasional camping.

An inactive farm with extensive hay fields extends along the west side of the river above Camp Schecter. On the east side, a commercial dairy occupies the area off the end of Rixie Road near East Olympia area, with pasture and hay fields in the valley floor. Other fields occupy parts of the river side area from near the Old Stage Road crossing to Rich Road.

Old Highway 99 parallels the river from south of the Hofert Tree Farm operation to above Rich Road. At places, the river runs within a few hundred yards of Old 99. A major gravel extraction operation (Mell) lies directly adjacent to the river along Old 99 separated from the river only by a dike. The Old 99 frontage which backs onto the Deschutes is largely occupied by individual low density residences and some businesses. A subdivision is in the early stages of site preparation along this frontage; lots in the subdivision would have a common river access. A few residences in this area are located directly on the river, gaining access from Old 99.

On the east side of the river there is also scattered residential use from Boe Sand and Gravel south on Rixie Road. The Riverlea Subdivision has a common open space area providing access for homeowners to the river. At the Rich Road bridge, all the common uses of the corridor are present--rural-density residences on the west, an inactive farm on the northeast, and a tree farm operation on the southeast side of the Rich Road bridge. The bridge provides good river access and the area is used throughout the year by fisherman, swimmers, and rafters. A well-used trail extends up river on the east side to locations used for salmon and steelhead fishing.

2. Summary and Conclusions

a. The corridor from Budd Inlet to Tumwater Valley is largely in open space and recreational uses. Around Capitol Lake, these are publicly- owned facilities while the Tumwater Falls Park and Tumwater Valley Golf and Racquet Club facilities are privately-owned. The private facilities provide extensive cost-effective public recreation (no fee at Tumwater Falls Park, fee recreation at the golf and athletic club facilities). However, the permanence of these privately-owned facilities may not be assured.

b. Above the Tumwater Valley Golf Course, corridor land uses are a mixture of actively-managed agricultural and timberlands, inactive or transitional agricultural and forest lands, gravel extraction, residential and commercial uses. While land use development in the corridor has not been rapid in recent years, some near-term development is anticipated.

Specific issues regarding land uses in this section of the river include:

(1) Extensive property on the east side of the river, north of Henderson Boulevard, has recently been annexed into Tumwater and major development is anticipated. Given the Greenbelt zoning designation placed on the river floor by the City of Tumwater and preliminary indications from the property owners, recreational use may actually be enhanced for residents of the property and potentially for the public at large by integrated development of this large property.

(2) Two roads parallel the river along much of the Rich/Henderson Reach of the corridor--Old 99 on the west and Rixie Road on

the east. Residential development along Rixie Road and Old 99 frontages has been gradual, but now occupies much of the road frontage which backs up to the river. Preliminary investigation of possible river access sites indicates the need to take action to secure public access before development of all road frontage parcels in rural density residential use makes public access more difficult.

(3) Much of the land in the corridor appears to be in a long-term transition, having fallen in recent years out of active agricultural or timber management, but not yet being developed for other uses. Such transitional parcels are being extensively used by the public without permission at both Rich Road and Henderson Boulevard. Securing these transitional sites for public recreation may be a timely action which would provide recreational access to the river for generations to come.

C. HABITAT: RIVERINE AND TERRESTRIAL

1. Significant Fish Species and Habitat[1]

The full length of the main stream above Tumwater Falls is used by migrating, spawning and rearing Chinook and Coho salmon and steelhead and cutthroat trout. The entire stream is utilized by sport fisherman, with use concentrated during steelhead and salmon runs. The Deschutes is also home to a rare endemic fish, the Olympic mud minnow (Novumbra Hubbsi Schultz). The Olympic mud minnow is an attractively-colored native fish which is restricted to a small geographic area in Southwestern Washington. This fish occurs in only one stream that flows into Puget Sound--the Deschutes River. (It also inhabits the Chehalis River basin.) The fish inhabits sloughs in Oxbow Lakes, such as the one between Henderson Boulevard and the golf course in Tumwater.[2] Good quality and quantity spawning habitat exist throughout this reach of the Deschutes. Good rearing habitat also exists including areas associated with instream, large woody debris, cut banks with roof masses, and side channels offering seasonal or year-round rearing habitat.

Stream side cover in the full reach is generally considered good, with extensive deciduous and coniferous stream side growth, interspersed with only occasional open areas. Cover, in the form of overhanging stream side vegetation and instream large woody debris (mostly trees and associated log jams), are critical elements in good fish-rearing habitat. Stream side covering is important to fish-rearing habitat because it shades the stream to help prevent stressful increases in summer-time water temperatures; affords perches for flying forms of aquatic insects which provide food for fish when they would drop into the water; as input of organic matter (leaf fall and tree fall) for the base of the organic food chain; and as fish-hiding cover in the shade of stream side trees. Instream large woody debris cover is important as a substrate for aquatic forms of insects which form the primary food of salmonid fishes; as a water velocity check to create local/water rearing pool habitat; as debris accumulation to deflect and meter flows creating stable and very productive backwater spawning and rearing habitat; and as structural hiding cover.

Off-channel flood plain ponded areas with flowing water access to the main river can be important seasonal rearing habitat, especially for over wintering yearling Coho salmon. These are defined as wall-based channels and are numerous throughout this stream reach. Care must be used in filling, culverting, removing stream side vegetation or otherwise disturbing these habitat areas.[3/4/5]

The river in the study area has a moderate gradient with a good pool-riffle balance. The channel width ranges from 15 to 30 yards with numerous, broad, clean gravel riffles. Bottom composition is mainly gravel with finer grain materials in the slower pools. The bottom is generally stable, except between the Boe Sand and Gravel Company site at river mile 6.3 and the Henderson Boulevard bridge at river mile 4.6. In this section, the stream appears to be less stable with greater bed

load movement and more active meandering. This appears to be the result of the stream adjusting to the large amount of large-grade gravelly bed load historically deposited into the stream from erosion of the large gravelly bluff at the Boe site. This has probably caused a relatively elevated stream bed downstream resulting in increased lateral stream meandering and bank cutting, compared to the reach upstream from the Boe site. This bank cutting has also resulted in more trees entering the stream and large numerous log jams between Boe Sand and Gravel and Henderson Boulevard.[1]

Below Henderson Boulevard, extensive stream bank areas have been contoured and rock riprapped for protection, resulting in a channelized river reach.

River mile 2.0, Tumwater Falls exists where the stream runs through a narrow, rocky canyon. A fish ladder was constructed here by the Department of Fisheries in 1954. The lower two river miles includes Capitol Lake, created by a dam constructed over tide flats in 1950. A fish ladder also exists at the Capitol Lake dam. Prior to the construction of fish ladders at Tumwater Falls, anadromous fish were blocked from migrating upstream by height of the falls. In conjunction with passage facilities, the Department of Fisheries has developed facilities for capture and artificial spawning of adult Chinook and Coho salmon migrating upstream. These eggs are used in highly successful hatchery programs. As a result of these efforts, Chinook, Chum and Coho salmon and steelhead from the Deschutes provide highly significant contributions to harvest of these species in Washington State.[2]

Although no particular spawning or rearing areas within this reach are felt to be especially important or other areas, some unique fish habitat features exist which are worthy of note. Larger tributary streams that are inhabited by Coho salmon and steelhead and cutthroat trout include:

Stream	River Mile Entry Point	Type of Fish Use
Jeff's Creek	4.0	Spawning and rearing
Chambers Creek	4.8	Spawning and rearing
Riverlea Creek	6.8	Rearing only
Spurgeon Creek	10.0	Spawning and rearing

A very large slack-water rearing habitat has been naturally created in the winter of 1984-85 when the river cut through a meander neck at approximately river mile 7.7. Approximately 800 to 1,000 feet of former river channel became a direct river-connected slack-water rearing habitat.

The large source of the gravel from the high gravelly bank at the BOE site is considered a major gravel source for spawning area downstream.

2. Summary and Conclusions Regarding Fisheries Habitat

a. There is good riparian habitat, sufficient gravel for spawning and good instream rearing habitat throughout this corridor. The corridor is used by four species of anadromous fish--Coho and

Chinook salmon and cutthroat and steelhead trout. Fish have been observed spawning from just above Deschutes Falls to Rich Road. The resident cutthroat trout are also a fishery resource. Enhancement of this fishery is currently being studied by the Washington Department of Game.

b. There are numerous (10 to 12) small, quiet side channels (called wall-base channels) and 4 larger tributary streams in this corridor. These provide critical over wintering habitat for juvenile Coho salmon. Such channels are heavily colonized by Coho salmon fry in late spring and again in Autumn. Recreational development of the corridor must be accomplished in a manner that will protect this critical habitat.[1]

c. Stream side vegetation provides valuable habitat, shades the river during summer and stabilizes the stream bank. Removal of stream side vegetation for recreational purposes (trails, views, etc.) should be discouraged.

d. Log jams provide habitat for fish. In 1986, six log jams completely blocked the course of the river and a dozen others partially block the stream in the study area. Removal of these log jams to accommodate river rafters should be discouraged.[1] The majority of log jams were observed downstream of Riverlea.

e. Changes in the river's course, while potentially very destructive to adjacent land, can serve to provide important habitat for Coho fry and other species. A recent dramatic example is the "Oxbow channel" created at about river mile 7.7 in the winter of 1985-86.

3. Terrestrial Habitat

The varied habitat types found within the corridor are used by a wide range of wildlife. Habitat types range from open water to wet meadow and wetland areas to dense second growth forest. Particularly in the Rich/Henderson Reach, the extensive undeveloped areas of the corridor are an important resource for wildlife habitat.

An extensive field study of wildlife habitat was not included in this project. However, a comprehensive mapping of habitat types and identification of species potentially utilizing such habitats was performed through graduate student interns from The Evergreen State College.[6] Habitat mapping previously prepared for the Skookumchuck River was compared to aerial photographs in order to identify key vegetative features associated with various designated habitats.[7] The classifications were refined to better match categories used by the Washington Department of Game Westside HABREL computer base. Aerial photographs of the Deschutes Corridor were then analyzed and categorized into the designated habitat types. (The mapping is available at the Thurston Regional Planning Council office for review.)

Wildlife/habitat relationships were then analyzed, using the WDOT data base, other studies of habitats in the region[8/9] and studies of habitat/species occurrences previously conducted within the

corridor.[10/11] Species potentially utilizing the corridor were then identified (see Attachment 1).

4. Terrestrial Habitat: Summary and Conclusions

   a. The results of the habitat study indicate that an extensive list of birds, mammals and amphibians likely use the corridor as a primary breeding habitat (see Attachment 1). In a regional perspective, the riparian and wetland areas are perhaps the most unique habitat types found in the study area. Beyond the specific habitat types, the extent of relatively undisturbed habitat, both riparian and upland, in the Rich/Henderson Reach is itself an important aspect of the corridor's wildlife value.

   b. Capitol Lake is also an important wildlife area, most vividly for migrating and seasonal waterfowl. The upper basin in particular has high habitat value and merits protection for waterfowl use.

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[1]This section is primarily based on two sources provided to the project Deschutes River, Mouth to Rich Road Bridge: Fish Use and Habitat Description, April 1980, Jim Fraser, Washington Department of Fisheries (unpublished), and a fisheries habitat study conducted by Clint Lougheed, The Evergreen State College, Master's of Environmental Studies Program, April 1986.

[2]Deschutes River Basin Instream Resources Protection Program, Washington Department of Ecology, June 1980.

[3]Juvenile Coho Salmon Fall/Winter Utilization of Two Small Tributaries of the Clearwater River, Jefferson County, Washington, Washington State Department of Natural Resources, Forks, Washington, 1984.

[4]Wall-Base Channels: Their Evolution, Distribution and Use by Juvenile Coho Salmon in the Clearwater River, Washington, Washington Department of Fisheries, Olympia, Washington, 1982.

[5]Evaluation of Seasonal Migration of Juvenile Salmonids Into and Out of a Pond in the Cowlitz River Flood Plain, Washington Department of Fisheries, Olympia, Washington, 1985.

[6]Wildlife Habitat in the Deschutes River Corridor, Janet Anthony and Don Bennett, April 1986, Master's of Environmental Studies Program, The Evergreen State College (unpublished).

[7]Inventory of Vegetative Communities and Associated Wildlife of the Skookumchuck River Drainage-Atlas, Young Adults Conservation Corps, Washington State Department of Game, Olympia, Washington, 1979.

[8]Forest Riparian Habitat Study--Phase I, Washington Forest Practices Board, Riparian Habitat Technical Committee, April 1985.

[9]Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington--Parts I and II, USDA Forest Service, Pacific Northwest Region, June 1985.

[10]Capitol Lake Recreation Plan, Washington State Department of General Administration, July 1976.

[11]Checklist of Birds for the Black Hills Audubon Society Area, Black Hills Audubon Society, Olympia, Washington, July 1979.

Attachment

1. Species lists for Deschutes Corridor, Janet Anthony and Don Bennett, April 1986, Master's of Environmental Education Program, The Evergreen State College.

ATTACHMENT 1

AMPHIBIAN AND REPTILE

SPECIES POTENTIALLY USING DESCHUTES CORRIDOR AS PRIMARY BREEDING HABITAT

NORTHWESTERN SALAMANDER	AMBYSTOMA GRACILE
LONG-TOED SALAMANDER	AMBYSTOMA MACRODACTYLUM
COPE'S GIANT SALAMANDER	DICAMPTODON COPEI
PACIFIC GIANT SALAMANDER	DICAMPTODON ENSATUS
OLYMPIC SALAMANDER	RHYACOTRITON OLYMPICUS
ROUGHSKIN NEWT	TARICHA GRANULOSA
DUNN'S SALAMANDER	PLETHODON DUNNI
VAN DYKE'S SALAMANDER	PLETHODON VANDYKEI
WESTERN RED-BACKED SALAMANDER	PLETHODON VEHICULUM
ENSATINA	ENSATINA ESCHSCHOLTZI
TAILED FROG	ASCAPHUS TRUEI
WESTERN TOAD	BUFO BOREAS
PACIFIC TREEFROG	HYLA REGILLA
RED-LEGGED FROG	RANA AURORA
CASCADES FROG	RANA CASCADAE
BULLFROG	RANA CATESBEIANA
SPOTTED FROG	RANA PRETIOSA
PAINTED TURTLE	CHRYSEMYS PICTA
WESTERN POND TURTLE	CLEMMYS MARMORATA
WESTERN FENCE LIZARD	SCELOPORUS OCCIDENTALIS
NORTHERN ALLIGATOR LIZARD	GERRHONOTUS COERULEUS
RUBBER BOA	CHARINA BOTTAE
SHARP-TAILED SNAKE	CONTIA TENUIS
RACER	COLUBER CONSTRICTOR
GOPHER SNAKE	PITUOPHIS MELANOLEUCUS
COMMON GARTER SNAKE	THAMNOPHIS SIRTALIS
WESTERN TERRESTIAL GARTER SNAKE	THAMNOPHIS ELEGANS
NORTHWESTERN GARTER SNAKE	THAMNOPHIS ORDINOIDES

BIRDS

SPECIES POTENTIALLY USING DESCHUTES CORRIDOR AS PRIMARY BREEDING HABITAT

COMMON LOON	GAVIA IMMER
PIED-BILLED GREBE	PODILYMBUS PODICEPS
AMERICAN BITTERN	BOTAURUS LENTIGINOSUS
GREAT BLUE HERON	ARDEA HERODIAS
GREEN-BACKED HERON	BUTORIDES STRIATUS
CANADA GOOSE	BRANTA CANADENSIS
WOOD DUCK	AIX SPONSA
GREEN-WINGED TEAL	ANAS CRECCA
MALLARD	ANAS PLATYRHYNCHOS
NORTHERN PINTAIL	ANAS ACUTA
BLUE-WINGED TEAL	ANAS DISCORS
CINNAMON TEAL	ANAS CYANOPTERA
NORTHERN SHOVELER	ANAS CLYPEATA
GADWALL	ANAS STREPERA
AMERICAN WIGEON	ANAS AMERICANA
RING-NECKED DUCK	AYTHYA COLLARIS
HARLEQUIN DUCK	HISTRIONICUS HISTRIONICUS
BARROW'S GOLDENEYE	BUCEPHALA ISLANDICA
BUFFLEHEAD	BUCEPHALA ALBEOLA
HOODED MERGANSER	LOPHODYTES CUCULLATUS
COMMON MERGANSER	MERGUS MERGANSER
RUDDY DUCK	OXYURA JAMAICENSIS
OSPREY	PANDION HALIAETUS
BALD EAGLE	HALIAEETUS LEUCOCEPHALUS
NORTHERN HARRIER	CIRCUS CYANEUS
SHARP-SHINNED HAWK	ACCIPITER STRIATUS
COOPER'S HAWK	ACCIPITER COOPERII
NORTHERN GOSHAWK	ACCIPITER GENTILIS
RED-TAILED HAWK	BUTEO JAMAICENSIS
AMERICAN KESTREL	FALCO SPARVERIUS
RING-NECKED PHEASANT	PHASIANUS COLCHICUS
BLUE GROUSE	DENDRAGAPUS OBSCURUS
RUFFED GROUSE	BONASA UMBELLUS
WILD TURKEY	MELEAGRIS GALLOPAVO
NORTHERN BOBWHITE	COLINUS VIRGINIANUS
CALIFORNIA QUAIL	CALLIPEPLA CALIFORNICA
MOUNTAIN QUAIL	OREORTYX PICTUS
VIRGINIA RAIL	RALLUS LIMICOLA
SORA	PORZANA CAROLINA
AMERICAN COOT	FULICA AMERICANA
KILLDEER	CHARADRIUS VOCIFERUS
SPOTTED SANDPIPER	ACTITIS MACULARIA
COMMON SNIPE	GALLINAGO GALLINAGO
WILSON'S PHALAROPE	PHALAROPUS TRICOLOR
MARBLED MURRELET	BRACHYRAMPHUS MARMORATUS
BAND-TAILED PIGEON	COLUMBA FASCIATA

MOURNING DOVE	ZENAIDA MACROURA
WESTERN SCREECH-OWL	OTUS KENNICOTTII
GREAT HORNED OWL	BUBO VIRGINIANUS
NORTHERN PYGMY-OWL	GLAUCIDIUM GNOMA
SPOTTED OWL	STRIX OCCIDENTALIS
BARRED OWL	STRIX VARIA
LONG-EARED OWL	ASIO OTUS
SHORT-EARED OWL	ASIO FLAMMEUS
NORTHERN SAW-WHET OWL	AEGOLIUS ACADICUS
COMMON NIGHTHAWK	CHORDEILES MINOR
VAUX'S SWIFT	CHAETURA VAUXI
ANNA'S HUMMINGBIRD	CALYPTE ANNA
RUFOUS HUMMINGBIRD	SELASPHORUS RUFUS
BELTED KINGFISHER	CERYLE ALCYON
LEWIS' WOODPECKER	MELANERPES LEWIS
RED-BREASTED SAPSUCKER	SPHYRAPICUS RUBER
DOWNY WOODPECKER	PICOIDES PUBESCENS
HAIRY WOODPECKER	PICOIDES VILLOSUS
NORTHERN FLICKER	COLAPTES AURATUS
PILEATED WOODPECKER	DRYOCOPUS PILEATUS
OLIVE-SIDED FLYCATCHER	CONTOPUS BOREALIS
WESTERN WOOD-PEWEE	CONTOPUS SORDIDULUS
WILLOW FLYCATCHER	EMPIDONAX TRAILLII
HAMMOND'S FLYCATCHER	EMPIDONAX HAMMONDII
WESTERN FLYCATCHER	EMPIDONAX DIFFICILIS
EASTERN KINGBIRD	TYRANNUS TYRANNUS
PURPLE MARTIN	PROGNE SUBIS
TREE SWALLOW	TACHYCINETA BICOLOR
VIOLET-GREEN SWALLOW	TACHYCINETA THALASSINA
GRAY JAY	PERISOREUS CANADENSIS
STELLER'S JAY	CYANOCITTA STELLERI
AMERICAN CROW	CORVUS BRACHYRHYNCHOS
COMMON RAVEN	CORVUS CORAX
BLACK-CAPPED CHICKADEE	PARUS ATRICAPILLUS
CHESTNUT-BACKED CHICKADEE	PARUS RUFESCENS
PLAIN TITMOUSE	PARUS INORNATUS
BUSHTIT	PSALTRIPARUS MINIMUS
RED-BREASTED NUTHATCH	SITTA CANADENSIS
WHITE-BREASTED NUTHATCH	SITTA CAROLINENSIS
BROWN CREEPER	CERTHIA AMERICANA
BEWICK'S WREN	THRYOMANES BEWICKII
HOUSE WREN	TROGLODYTES AEDON
WINTER WREN	TROGLODYTES TROGLODYTES
MARSH WREN	CISTOTHORUS PALUSTRIS
AMERICAN DIPPER	CINCLUS MEXICANUS
GOLDEN-CROWNED KINGLET	REGULUS SATRAPA
RUBY-CROWNED KINGLET	REGULUS CALENDULA

WESTERN BLUEBIRD	SIALIA MEXICANA
TOWNSEND'S SOLITAIRE	MYADESTES TOWNSENDI
SWAINSON'S THRUSH	CATHARUS USTULATUS
HERMIT THRUSH	CATHARUS GUTTATUS
AMERICAN ROBIN	TURDUS MIGRATORIUS
VARIED THRUSH	IXOREUS NAEVIUS
CEDAR WAXWING	BOMBYCILLA CEDRORUM
EUROPEAN STARLING	STURNUS VULGARIS
SOLITARY VIREO	VIREO SOLITARIUS
HUTTON'S VIREO	VIREO HUTTONI
WARBLING VIREO	VIREO GILVUS
ORANGE-CROWNED WARBLER	VERMIVORA CELATA
NASHVILLE WARBLER	VERMIVORA RUFICAPILLA
YELLOW WARBLER	DENDROICA PETECHIA
YELLOW-RUMPED WARBLER	DENDROICA CORONATA
BLACK-THROATED GRAY WARBLER	DENDROICA NIGRESCENS
TOWNSEND'S WARBLER	DENDROICA TOWNSENDI
HERMIT WARBLER	DENDROICA OCCIDENTALIS
MACGILLIVRAY'S WARBLER	OPORORNIS TOLMIEI
COMMON YELLOWTHROAT	GEOTHLYPIS TRICHAS
WILSON'S WARBLER	WILSONIA PUSILLA
WESTERN TANAGER	PIRANGA LUDOVICIANA
BLACK-HEADED GROSBEAK	PHEUCTICUS MELANOCEPHALUS
RUFOUS-SIDED TOWHEE	PIPILO ERYTHROPHTHALMUS
CHIPPING SPARROW	SPIZELLA PASSERINA
VESPER SPARROW	POOECETES GRAMINEUS
SAVANNAH SPARROW	PASSERCULUS SANDWICHENSIS
FOX SPARROW	PASSERELLA ILIACA
SONG SPARROW	MELOSPIZA MELODIA
LINCOLN'S SPARROW	MELOSPIZA LINCOLNII
WHITE-CROWNED SPARROW	ZONOTRICHIA LEUCOPHRYS
DARK-EYED JUNCO	JUNCO HYEMALIS
RED-WINGED BLACKBIRD	AGELAIUS PHOENICEUS
BREWER'S BLACKBIRD	EUPHAGUS CYANOCEPHALUS
BROWN-HEADED COWBIRD	MOLOTHRUS ATER
NORTHERN ORIOLE	ICTERUS GALBULA
PINE GROSBEAK	PINICOLA ENUCLEATOR
PURPLE FINCH	CARPODACUS PURPUREUS
HOUSE FINCH	CARPODACUS MEXICANUS
RED CROSSBILL	LOXIA CURVIROSTRA
PINE SISKIN	CARDUELIS PINUS
AMERICAN GOLDFINCH	CARDUELIS TRISTIS
EVENING GROSBEAK	COCCOTHRAUSTES VESPERTINUS

MAMMAL

SPECIES POTENTIALLY USING DESCHUTES CORRIDOR AS PRIMARY BREEDING HABITAT

VIRGINIA OPOSSUM	DIDELPHIS VIRGINIANA
PACIFIC WATER SHREW	SOREX BENDIRII
MASKED SHREW	SOREX CINEREUS
DUSKY SHREW	SOREX MONTICOLUS
WATER SHREW	SOREX PALUSTRIS
TROWBRIDGE'S SHREW	SOREX TROWBRIDGII
VAGRANT SHREW	SOREX VAGRANS
SHREW-MOLE	NEUROTRICHUS GIBBSII
COAST MOLE	SCAPANUS ORARIUS
TOWNSEND'S MOLE	SCAPANUS TOWNSENDII
BIG BROWN BAT	EPTESICUS FUSCUS
SILVER-HAIRED BAT	LASIONYCTERIS NOCTIVAGANS
HOARY BAT	LASIURUS CINEREUS
CALIFORNIA MYOTIS	MYOTIS CALIFORNICUS
LITTLE BROWN MYOTIS	MYOTIS LUCIFUGUS
LONG-LEGGED MYOTIS	MYOTIS VOLANS
YUMA MYOTIS	MYOTIS YUMANENSIS
COYOTE	CANIS LATRANS
RED FOX	VULPES VULPES
BLACK BEAR	URSUS AMERICANUS
RACCOON	PROCYON LOTOR
RIVER OTTER	LUTRA CANADENSIS
STRIPED SKUNK	MEPHITIS MEPHITIS
ERMINE	MUSTELA ERMINEA
LONG-TAILED WEASEL	MUSTELA FRENATA
MINK	MUSTELA VISON
SPOTTED SKUNK	SPILOGALE PUTORIUS
MOUNTAIN LION	FELIS CONCOLOR
BOBCAT	LYNX RUFUS
ELK	CERVUS ELAPHUS
BLACK-TAILED DEER	ODOCOILEUS HEMIONUS
MOUNTAIN BEAVER	APLODONTIA RUFA
NORTHERN FLYING SQUIRREL	GLAUCOMYS SABRINUS
WESTERN GRAY SQUIRREL	SCIURUS GRISEUS
TOWNSEND'S CHIPMUNK	TAMIAS TOWNSENDII
DOUGLAS' SQUIRREL	TAMIASCIURUS DOUGLASII
WESTERN POCKET GOPHER	THOMOMYS MAZAMA
NORTHERN POCKET GOPHER	THOMOMYS TALPOIDES
BEAVER	CASTOR CANADENSIS
BUSHY-TAILED WOODRAT	NEOTOMA CINEREA
DEER MOUSE	PEROMYSCUS MANICULATUS
SOUTHERN RED-BACKED VOLE	CLETHRIONOMYS GAPPERI
LONG-TAILED VOLE	MICROTUS LONGICAUDUS

MONTANE VOLE	MICROTUS MONTANUS
CREEPING VOLE	MICROTUS OREGONI
WATER VOLE	MICROTUS RICHARDSONI
TOWNSEND'S VOLE	MICROTUS TOWNSENDII
MUSKRAT	ONDATRA ZIBETHICUS
PORCUPINE	ERETHIZON DORSATUM
NUTRIA	MYOCASTOR COYPUS
SNOWSHOE HARE	LEPUS AMERICANUS
EASTERN COTTONTAIL	SYLVILAGUS FLORIDANUS

D. LAND USE REGULATIONS AFFECTING RECREATION

The Deschutes River is under the jurisdiction of three local governments: Thurston County, Tumwater, and Olympia. Additionally, the three basins of Capitol Lake are under the jurisdiction of the State of Washington Department of General Administration. All of these governmental units are guided by the same shoreline master program, the Shoreline Master Program for the Thurston Region. Each of these local jurisdictions has its own comprehensive plan, zoning ordinance, and flood plain ordinance that contain regulations affecting land uses in the Deschutes River Corridor. Shoreline zoning and flood control may all apply to a given area (generally, the most restrictive will apply). Following is a summary of these regulations.

1. Shoreline Master Program for the Thurston Region

The Shoreline Master Program designates the Deschutes River as primarily Rural and Conservancy, with several small areas designated Urban in the lower reach. In general, the stretch of Capitol Lake from the Olympia swimming beach to the brewery is designated Conservancy. From the brewery south, the designation is Rural or Urban until approximately 1/3 mile west of the Henderson Boulevard crossing of the river. The remainder of the study area to Rich Road is designated Conservancy.

The Shoreline Master Program is divided into sections on each general type of land use. Each section is then divided into policies that apply to all environmental designations; General Regulations that apply to all environmental designations; and Regulations that apply only to specific environmental designations.

The section on "Recreation" is the one most relevant to this plan. The Policies and General Regulations that apply to all environmental designations (see Table 1) encourage recreational uses. However, the Regulations that apply only to specific environmental designations (see Table 2) conflict with each other.

Both the Rural and Conservancy environmental regulations discuss "low" and "medium" intensity recreational uses; however, Shoreline Master Program (see Table 3) contains definitions only of "low"- and "high"-intensity uses--not of "medium" intensity recreational uses. Additionally, the discussion of what is allowed as a low-intensity use in the Conservancy Environment conflicts with the definition of low intensity contained elsewhere in the Master Program.

These conflicting definitions make it difficult to determine whether certain recreational uses are allowed. It seems appropriate to allow more uses in the Conservancy Environment than those defined as low intensity, as the definition of low intensity reflects only passive recreation with minimal facilities.

A further conflict exists regarding the division between Rural and Conservancy areas near Henderson Boulevard. A distinct break in character occurs at Henderson Boulevard, but the Rural/Conservancy

boundary is located 1/4 mile down river at the section line. This puts the boundary in the middle of the Tumwater Valley rather than Henderson Boulevard where conditions actually do change from the more natural and rugged Rich/Henderson Reach to the open pastoral Tumwater Valley.

TABLE 1

Shoreline Master Program for the Thurston Region
Policies That Apply to all Environmental Designations
From Section 3, Chapter 13: Recreation

Policies

1. The linkage of shoreline parks and public access points through provisions for linear open spaces should be encouraged. Such open space could include hiking paths, bicycle paths and/or scenic drives located as close to the water's edge as feasible.

2. Recreational developments should be designed to preserve, enhance or create scenic views and vistas. Favorable consideration should be given to those projects that complement their environment.

3. Where possible, parking areas should be located inland, away from the immediate edge of the water, and recreational beaches, and should be linked with the shoreline by walkways.

4. Facilities for intensive recreational activities should be permitted only where sewage disposal and pest control can be accomplished to meet public health standards without altering the environment adversely.

General Regulations

1. Recreational developments must provide facilities for nonmotorized access, such as pedestrian, bicycle and/or equestrian path links to the shoreline.

2. Public or private recreation areas which cater to the use of all-terrain or off-road vehicles as the primary recreational activity shall not be allowed in the shoreline areas.

TABLE 2

Regulations That Apply Within Specific Environmental Designations
From Section 3, Chapter 13, Shoreline Master Program

Rural Environment

1. A recreational facility or structure which changes or detracts from the character of the Rural Environment (by building design or intensity of use) shall be prohibited.

TABLE 2 - Continued

2. Roads, parking and vehicular camping facilities, including restrooms, shall not be located within fifty (50) feet of the ordinary high-water mark of any shoreline with the exception of access to boat launching facilities. Parking facilities and roadways may be within fifty (50) feet only if they provide access for handicap or for scenic viewpoints. Maintenance or upgrading of existing roads, parking and/or vehicle camping facilities including restrooms is permitted provided the area devoted to these facilities is not enlarged. Pedestrian and hiking trail access shall be provided to link upland facilities with the shoreline.

Conservancy Environment

1. Roads, parking and vehicular camping facilities, including restrooms, shall not be located within one hundred (100) feet of the ordinary high-water mark of any shoreline with the exception of access to boat launch facilities. Maintenance or upgrading of existing roads, parking and/or vehicle camping facilities including restrooms is permitted. Parking facilities and roadways may be within one hundred (100) feet only if they provide access for handicap or scenic viewpoints. Pedestrian or hiking trail access should be provided to connect upland facilities with the shoreline.

2. Whenever possible, landscaping shall be done with native species.

3. A recreational facility or structure which changes or detracts from the character of the Conservancy Environment (by building design or intensity of use) shall be prohibited.

4. Public or private recreation areas which cater to the use of all-terrain or off-road vehicles as the primary recreational activity shall not be allowed in the shoreline areas.

TABLE 3

Definitions
From Section Four, Shoreline Master Program

RECREATION, HIGH INTENSITY. Involves uses in which parks, campgrounds, boat ramps, motor vehicles or playgrounds may be required. Providing for these facilities often requires land clearing, earth modification and construction of a variety of structures. Activities include, but are not limited to boating, water skiing, organized games and sports, swimming in specifically developed or designated areas such as parks and other recreational developments such as resorts, hotels and campgrounds.

RECREATION, LOW INTENSITY. Involves activities such as hiking, canoeing, viewing, nature study, photography and fishing. Low intensity uses do not require extensive preparation of facilities.

2. Zoning Ordinances

a. Olympia Zoning Ordinance. The City of Olympia has jurisdiction over the Capitol Lake portion of the Deschutes River Corridor roughly to the I-5 overcrossing. There are seven zoning designations that apply to this portion. These are as follows:

(1) RM (Residential Multifamily)
(2) RMH (High-rise Multifamily)
(3) R1 (Single-family Residential)
(4) R2 (Two-family Residential)
(5) CW (Central Waterfront)
(6) DB (Downtown Business)
(7) CSH (Commercial Services/High-Density)

All of these zones contain provisions for public facilities, parks, and playgrounds, allowing them either as conditional uses or uses permitted outright in some zones. Additionally, some of the zones go further in allowing and encouraging recreational uses. For example, in addition to those three types of uses, the Central Waterfront zone also allows commercial recreation, marine and boat launching facilities, piers, docks, wharves, and landings and boating clubs, thus taking the recreational component even further.

b. Tumwater Zoning Ordinance. The City of Tumwater has applied seven zoning designations to the portion of the Deschutes River Corridor within its jurisdiction. These are as follows:

(1) R-L (Residential Low-density)
(2) G-B (Greenbelt Area)
(3) C-I (Commercial Industrial)
(4) H-C (Historical Commercial)
(5) C-L (Commercial Low-Intensity)
(6) C-M (Commercial Medium-Intensity)
(7) R-M (Residential Medium Density)

All of these zoning designations allow park and recreation uses either as permitted uses or conditional uses. Several of the zones go even further in allowing and encouraging recreational uses. For example, the R-M zone, in addition to the parks and open space areas which are allowed in all zones, allows "noncommercial recreational structures which could include swimming pools and recreational ball courts" and "neighborhood community centers." The Commercial Industrial C-I zone allows, in addition to parks and open spaces, recreational facilities as a permitted use. The bulk of the non-industrial riverside area is in Greenbelt designation, which is specifically designed to protect and enhance open space and recreational uses.

c. Thurston County Zoning Ordinance. Thurston County has applied seven zoning designations to the portion of the Deschutes River Corridor within its jurisdiction. These are as follows:

(1) R4-8/1
(2) R2/1

(3) R1/2
(4) LI (Light Industrial)
(5) R4/1
(6) R1/5
(7) UUD (Unmapped Use District)

The Thurston County Zoning Ordinance does not specifically mention recreation as a use allowed in any of the relevant zones. The types of uses listed in the Zoning Ordinance that can be considered recreation are boat launch, community club/homeowner association, golf/health/country clubs, public facilities, riding stables/arenas/academies, rifle/pistol/archery ranges--outdoor, and travel trailer park/commercial campgrounds. Although the uses above mentioned in the Zoning Ordinance are a type of recreational use, the Zoning Ordinance does not clearly address or encourage recreational uses along the Deschutes River Corridor. See Table 4 for the uses allowed in the relevant zones.

Certain existing zones in the corridor are incompatible with long-term protection of valuable natural resources. In particular, the Deschutes Corridor Plan recommends that the Rich/Henderson Reach primarily be considered as a conservation area for passive recreational use. Near Henderson Boulevard and along Old 99, stretches of this reach are zoned four units per acre and above. These designations are not consistent with resource protection.

TABLE 4

Recreation Type Uses Allowed in Relevant Zoning Designations

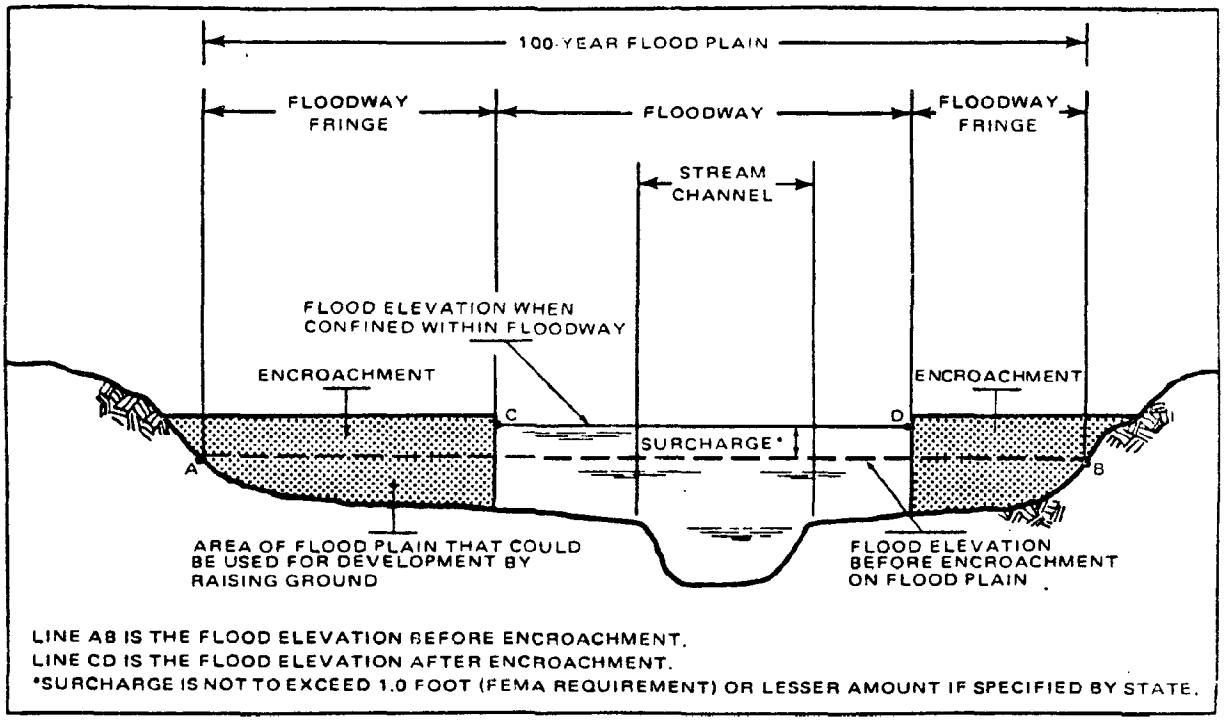
	R 4-8/1	R 4/1	R 2/1	R 1/2	R 1/5	LI	UUD
Boat launch	X	X	X	X	X		X
Community club/homeowner assn.	X	X	X	X	X		X
Golf/health/country club	X	X	X	X	X		X
Public facilities	X	X	X	X	X	X	X
Riding stables/arenas/academies				X	X		X
Rifle/pistol/archery ranges--outdoor				X	X		X
Travel trailer park/commercial campgrounds				X	X		X

X = Uses allowed subject to Hearings Examiner approval.

3. Flood Plain Ordinances

The Federal Emergency Management Agency (FEMA) has produced flood plain management regulations which the local governments in the Corridor have each adopted. Two zones are identified: the "floodway" and the "floodway fringe." These two zones comprise the "100-year flood plain," which is that area estimated to have a one percent chance of being flooded in a given year. The "floodway" is that part of the 100-year flood plain which must be kept free of obstructions to avoid raising the 100-year flood elevation by more than one foot (see Figure 1).

FIGURE 1



Both the 100-year flood plain and the narrower floodway are mapped (a color composite overlay showing these designations and other features is available at the Regional Planning Office, as are FEMA maps of the corridor). Regulation in the floodway is quite strict; only temporary placement of recreational vehicles and travel trailers is allowed, and these must be removed from November 15 through March 15 each year. The floodway fringe (from the floodway to the edge of the 100-year flood plain) also has regulations. However, these do not limit or prohibit types of uses, but instead require that all construction be flood proofed (generally, residences are flood proofed by elevating the lowest floor one foot above the level of the 100-year flood).

4. Summary and Conclusions

a. The Shoreline Master Program for the Thurston Region is inconsistent in regard to recreational uses. Some sections encourage such uses while others appear to possibly restrict recreational opportunities. The definition of "low-intensity" and "high-intensity" uses should be changed to more accurately reflect appropriate uses, and a definition of "medium intensity" should be added.

In addition, changing the environmental designation in the Tumwater Valley should be considered. Moving the boundary between Rural and Conservancy up river to Henderson Boulevard would more accurately reflect the natural boundary between the Rich/Henderson Reach and Tumwater Valley.

b. Most zoning designations in the corridor are consistent with recreational use and resource protection.

c. However, the Thurston County Zoning Ordinance and Comprehensive Plan should be reviewed and policies considered that would protect natural resource values and encourage compatible recreational uses along the Deschutes River Corridor.

E. WATER QUALITY

1. Classification of the Deschutes River and Capitol Lake

All surface water in Washington is classified as to the beneficial uses of the water body which should be protected. The highest classifications (Class A and Class AA) are suitable for all uses including water contact sports. The intent of the classification system is to have the water quality of each water body maintained at a suitable level.

The Deschutes is classified as Class A (Excellent) water.[1] Capitol Lake is not defined as a "lake" in these regulations, as it does not meet the 15-day mean detention time criteria (i.e., due to the rapid exchange of water from the Deschutes River to Budd Inlet). Thus, Capitol Lake is also considered Class A water.

2. Fecal Contamination

Water quality in the study area of the Deschutes generally meets or exceeds Class A standards for temperature, dissolved oxygen, pH, and aesthetics (smell, taste, etc.). Fecal coliform organisms have occasionally been recorded in the study area in excess of Class A standards.[2/3] Capitol Lake was identified as providing approximately 1/3 of the fecal coliform loading into Budd Inlet; however, the river/lake contributed 90 percent of total freshwater inflow compared to 4 percent from Moxley Creek (with 30 percent of fecal coliform loading) and 3 percent for the sewage treatment plan (which added 37 percent of fecal coliform loading).[4]

In 1978, a study pinpointed a possible fecal coliform source in the lower river which was found to be a faulty lift station. This was corrected and subsequent monitoring indicated substantial improvement in water quality.[5] Other sources of fecal contamination have not been identified; identity and rectification of these sources is one of the Thurston County Health Department water quality enhancement priorities for 1986.[6]

In Capitol Lake, fecal counts have more frequently exceeded Class A standards with additional potential sources identified in storm drains near Olympia's Capitol Lake Park swimming beach. These sources were partially corrected in 1983.[5]

3. Capitol Lake Water Clarify Problems

Even in the absence of fecal pollution, Capitol Lake "swimmability" and general aesthetics are still heavily impacted by poor water clarity. Summer algal blooms frequently exceed "swimmable" standards.[5] At times, heavy algal blooms create unaesthetic conditions on the lake in general. Algae growth is stimulated in Capitol Lake by the combination of (1) high levels of nutrients and (2) availability of sunlight in the lake's shallow basins.

Studies on the sources of phosphorus and nitrogen which feed the Capitol Lake algal blooms have found several key points, including:

a. A fish-rearing operation in Percival Cove does not significantly contribute to the lake's nutrient budget. In 1978, the water quality in the cove was similar to lake water quality and cove flushing was not found to generally coincide with either the swimming seasons or periods of high algal blooms.[7]

b. Nutrient impacts to Capitol Lake are largely from the Deschutes, consisting of both phosphorus and nitrogen. As is common in other open water bodies for which nutrient budgets have been prepared, phosphorus is a limiting nutrient to algae growth in Capitol Lake. However, in the latter part of the growing season, nitrogen becomes the limiting nutrient as a larger percentage decrease in phosphorus occurs during low summer flows.[7]

c. Dairy operations and brewery cooling waters may be controllable sources of nutrients. Efforts by local and state officials to control these possible sources is underway according to a 1983 study.[8]

d. Stratified saltwater in a depression behind the Capitol Lake dam creates significant water quality problems. In 1982, a study found this depression to be the single most significant water quality factor in Capitol Lake. The problem begins when organisms and detritus decompose in oxygen-poor stratified saltwater which has been "trapped" for several days beneath the lighter freshwater from the Deschutes. This occurs particularly when high tides are lower than the lake water level. Dissolved oxygen levels can fall rapidly within this trapped saltwater body as decomposition occurs. This problem is apparently more acute later in the season. Anaerobic water conditions and hydrogen sulfides can be produced, causing fish kills in Budd Inlet when the trapped water is finally flushed from the lake.[5]

e. More frequent flushing could reduce algal blooms and water quality problems in the depression behind the dam, but must be coordinated with maintaining Budd Inlet water quality, needs for fish rearing and fish passage, and tide levels.[5,7]

4. Erosion and Siltation

Siltation of Capitol Lake is related to other water quality issues and poses an ongoing problem for retaining the open water environment originally envisioned for Capitol Lake in the 1940's. While erosion of gravel banks is crucial for maintaining spawning areas in the Deschutes, erosion of silty and clay soil banks can smother spawning redds and reduce the extent of spawning areas. In addition, past heavy bank erosion near the Boe gravel extraction site has loaded the stream bed of the Deschutes with large quantities of sands and gravel, reducing water depth and increasing channel instability from the Boe extraction site to Henderson Boulevard.[9] Sites with significant erosion were identified by a 1984 Thurston County Conservation District study. Management alternatives are outlined, with discussion of positive and negative impacts of management techniques ranging from simple bank revegetation to peak flow containment (i.e., reservoir construction).[10] At several sites on the Rich/Henderson Reach, banks have been armored to prevent further erosion.

Bank stability is a concern for recreational site development. Stabilization may be warranted if the channel is unstable or bank erosion is proceeding rapidly, particularly if the near shore area is to contain recreational facilities.

Siltation in Capitol Lake is an ongoing concern of the Department of General Administration and is hopefully to be maintained at an acceptable level through an ongoing program of dredging.

5. Summary and Conclusions

a. The Deschutes River generally meets "fishable" and "swimmable" standards (Class A) water. However, fecal coliform counts have been recorded which exceed allowable levels, especially in low water periods of summer and fall.

Ongoing monitoring and source reduction is being carried out by the Washington Department of Ecology and the Thurston County Environmental Health Department. These programs should be continued and encouraged to help protect water quality for recreational use.

b. Capitol Lake has water quality problems from algal blooms due to high nutrient levels, from fecal coliform contamination and from saltwater intrusion and stratification.

Water quality problems may limit the practicality of using Capitol Lake for water-contact sports. However, enhancing Capitol Lake water quality will remain important to protect aesthetics and fish resources. These goals may require a variety of lake and watershed management actions to reduce nutrients and contaminants and provide better flushing and/or aeration. At the time of this report (June 1986), a number of activities are under way to address various aspects of water quality problems in Capitol Lake, including:

(1) An intergovernmental Capitol Lake Task Force is currently dealing with the water pollution issue and is expected to provide recommendations on actions to improve the recreational resource of Capitol Lake.

(2) The Pabst Brewery is working with the Environmental Protection Agency on a National Pollution Discharge Elimination System (NPDES) permit.

c. Erosion leads to lake siltation, bank instability, and to unstable river channel conditions in the lower Rich/Henderson Reach.

The dredging program of the Washington Department of General Administration is intended to maintain acceptable water levels in Capitol Lake. Bank stabilization on the Deschutes needs to be balanced with the necessity for insuring gravel for spawning. Recreational development on the Deschutes may require bank stabiliation to protect and enhance intended recreational uses while limiting stream bank erosion.

[1]Chapter 173-201-045, Washington Administrative Code.

[2]Washington Department of Ecology, Office of Water Programs, Water Quality Maintenance Division, Water Quality Investigation Section, Monitoring Data From the "E" Street Bridge (see Attachment 1).

[3]Thurston County Health Department, Environmental Health Section, Monitoring Data From Deschutes Swimming Areas (see Attachment 3).

[4]Effects of Point Source Discharges and Other Inputs on Water Quality in Budd Inlet, Washington (1979), Washington Department of Ecology.

[5]Deschutes River/Capitol Lake Water Quality Assessment (1982), Lynn Singleton, Washington Department of Ecology.

[6]Conversation with Rick Pierce, Thurston County Health Department, Environmental Health Section.

[7]Water Quality in Capitol Lake, Olympia, Washington (1978), CH2M Hill, Washington Department of Ecology and Washington Department of General Administration.

[8]Capitol Lake Restoration Analysis (1983), Entranco Engineers, Washington Department of General Administration.

[9]Conversation with Paul Ludwig, Soil Conservation Service.

[10]Stream Corridor Management Plan for the Deschutes River (January 1984), Richard MacNicholas, Thurston County Conservation District.

Attachments

1. Excerpts from WDOE Water Quality Monitoring
2. Excerpts from Thurston County Health Department, Water Quality Monitoring

ATTACHMENT 1

DEPARTMENT OF ECOLOGY

RETRIEVAL --- 19 FEBRUARY 1986

OFFICE OF WATER PROGRAMS
WATER QUALITY MANAGEMENT DIVISION
WATER QUALITY INVESTIGATIONS SECTION

13A060 DESCHUTES R AT E STREET BRIDGE 12080010

DATE FROM TO	TIME	DEPTH METERS	STREAM FLOW CFS-AVG	WATER TEMP DEG-C	DISSOLVED OXYGEN mg/l	DO PERCENT SATURATN	pH STANDARD UNITS	CONDUCTVY @ 25 C MICROMHOS	SOLIDS SUSPENDED mg/l	FECAL COLIFORM /100ml MF	TURBIDITY TURBMETER NTU	COLOR PT-CO UNITS
80/01/15	1250		1270.0	5.7	12.0	95.1	7.1	65	40	288	10.0	83
80/02/20	1515		1000.0	7.2	12.0	99.3	7.2	65	27	746	12.0	75
80/03/18	1345		785.0	7.7	11.8	97.0	7.3	74	15	44	6.0	65
80/04/23	1415		550.0	12.8	10.8	100.9	7.3	90	6	108	5.0	46
80/05/28	1350		205.0	12.6	11.9	109.7	7.8	102	4	20	3.0	26
80/06/24	1320		146.0	13.8	10.5	100.2	7.6	115	2	42	2.0	21
80/07/17	1125		126.0	15.6	10.1	98.9	7.5	118	2	24	2.0	13
80/08/28	1205		76.0	14.0	12.3	116.7	7.8	119	4	648	1.0	21
80/09/25	1110		72.0	11.9	11.5	105.0	7.6	120	2	52	2.0	17
80/10/30	1230		59.0	8.4	14.4	120.9	7.6	125	3	5808	1.0	17
80/11/20	1255		162.0	9.4	11.4	97.2	7.4	101	4	19	6.0	38
80/12/18	1350		314.0	7.6	11.5	95.1	7.2	90	6	208	5.0	25
81/01/22	1135		265.0	9.0	10.7	92.0	7.3	103	3	44	4.0	33
81/02/26	1130		760.0	8.0	11.1	93.0	7.2	60	17	23	14.0	63
81/03/26	1205		402.0	11.0	11.8	106.0	7.4	90	10	40	8.0	50
81/04/30	1140		390.0	12.8	10.6	99.1	7.2	85	4	19	4.0	25
81/05/18	1110		265.0	11.5	11.1	101.4	7.5	105	4	23	2.0	25
81/06/18	1150		290.0	13.0	10.3	96.6	7.2	103	10	1508	21.0	38
81/07/30	1140		105.0	15.6	10.3	101.7	7.4	118	9	28	2.0	17
81/08/20	1250		65.08	15.6	10.8	106.7	7.5	120	2	148	2.0	17
81/09/17	1120		45.06	14.3	10.3	99.1	7.3	122	1	31	3.0	21
81/10/15	1240		226.0	8.7	11.3	95.1	7.2	97	3	128	4.0	25
81/11/12	1100		660.0	10.6	10.5	94.1	7.4	93	56	2508	21.0	63
81/12/17	1135		1280.0	6.2	11.9	95.2	7.0	68	26	148	21.0	67
82/01/14	1110		442.0	7.8	11.9	98.7	7.4	85	4	36	9.0	42
82/02/10	1155		342.0	3.9	12.8	96.8	7.0	93	7	48	6.0	25
82/03/18	1255		700.0	8.0	11.2	94.6	6.9	82	8	38	6.0	33
82/04/22	1055		518.0	10.9	11.0	98.4	7.0	67	10	5K	5.0	25
82/05/13	1235		210.08	11.2	11.7	104.8	7.6	102	1	118	1.0	17
82/06/17	1105		177.0	16.0	10.2	102.0	7.7	119	4	128	1.0	21
82/07/22	1330		136.0	15.4	10.5	102.2	7.7	120	2	31	2.0	25
82/08/19	1130		95.08	14.2	10.9	104.9	7.6	135	3	30		13
82/09/23	1130		77.0	12.3	10.4	96.1	7.6	125	2	28	5.0	21
82/10/13	1445		102.0	11.8	12.3	111.9	7.9	120	2	29	1.0	8
82/11/10	1500		250.0	6.1	12.0	95.8	7.5	94	2	23	3.0	42
82/12/15	1420		920.0	6.6	11.4	94.3	7.3	70	72	76	58.0	67
83/01/12	1415		1160.0	6.8	11.8	96.6	7.1	71	41	88	20.0	54
83/02/09	1400		471.0	7.7	11.4	96.5	7.4	90	12	2406	8.0	46
83/03/16	1410		713.0	7.4	11.4	100.1	7.2	80	12	4K	8.0	38
83/04/13	1540		380.0	10.7	12.5	110.9	7.3	97	4	1K	4.0	25
83/05/11	1440		272.0	12.4	11.7	107.7	7.8	101	4	68	3.0	21
83/06/15	1645		185.0	16.9	11.9	120.3	8.0	79	5	37	2.0	25
83/07/13	1515		205.0	16.8	11.1	113.2	7.8	105	8	27	4.0	34
83/08/10	1525		156.0	16.9	11.7	118.7	7.9	120	5	178	4.0	17
83/09/08	1010		127.0	12.3	10.8	100.0	7.0	121	3	548	4.0	25
83/10/04	1540		114.0	13.2	12.5	116.9	8.3	112	5	8K	1.0	25
83/11/02	1620		155.0	11.2	10.5	95.4	7.3	110	6	2308	5.0	38
83/12/06	1615		365.0	6.6	11.5	93.3	7.3	104	6	23	6.0	29

ATTACHMENT 2

Thurston County Health Department

Swimming area monitoring program

Deschutes River stations - 1982 to 1985

Total colif. / Fecal coliform per 100 ml.	July 6, 1982	July 13, 1982	July 26, 1982	Aug. 25, 1982	June 29, 1983	Aug. 8, 1983	July 24, 1984	July 31, 1984	July 8 1985	July 30, 1985	Oct 19 1985
#1 Deschutes Falls	150 / 93		43				6		128		
#2 Vail Rd. Bridge									65	175	90
#3 Vail Cut-Off Bridge			240			440				150	105
#4 Vail Loop Bridge				240	56		26		350		110
#5 507 Bridge	930 / 150	93	430		80	16	36		20	70	
#6 Military Rd. Brid.	930 / 240	93	43	150	82	40	60		35	55	65
#7 Waldrick Rd. Bridg.	430 / 43		240		26	4	16		52		25
* #8 Rich Rd. Bridge	240	93	43	93 / 75	18	6			20	25	55
* #9 Henderson Bridge	150	43	29	150	42	6			25		
* #10 Tumwater Valley Brid.				43	62	374	140	8	260	30	25
* #11 below Falls Tumwater Falls Pk.									240		70
* #12 before lake Tumwater Falls Pk.									70		

F. PUBLIC RIGHTS TO RIVER ACCESS:

THE "NAVIGABILITY" ISSUE

1. Public Right to Pass Over Water

Through various court cases, it has been established that the public has the right to pass over the surface of a water body like the Deschutes. This right exists regardless of whether the river bed is owned privately or publicly. On the Deschutes, this right has generally been accepted as a matter of course. There are no known incidents of property owners attempting to limit passage by boaters on the Deschutes.

2. Ownership of Bed and Shorelands: The "Navigability" Question

Ownership of the Deschutes River bed and shorelands has not been officially resolved. Under the State Constitution, the State was granted title to bedlands and shorelands of all "navigable" bodies of water. Such lands are administered by the Washington State Department of Natural Resources. Generally, the issue is not navigability under current standards, but under standards that would have been in place at the time of statehood in 1889. The status of the Deschutes has not been determined in regard to this 1889 test of "navigability."

If a river is "navigable," public ownership extends under the bed of the river out to the "line of ordinary high water." While not directly defined by case law or statute, the Department of Natural Resources has generally used the line of permanent vegetation as the "ordinary high-water" mark. However, no clear standards exist for determining the landward boundary of non-tidal "navigable waters."

The impact of the "navigability" issue on recreation along the Deschutes River is potentially far-reaching. Especially in the lower reaches, extensive gravel bar areas have built up where the channel makes frequent changes. These gravel bars would be legally accessible to the public in low water periods if the river were determined to be "navigable," as they would lie between the line of low water and the line of ordinary high water as defined by the line of permanent vegetation.

The ultimate determination of the navigability of a water body and thus ownership of the shorelands rests with judicial action. In lieu of such final resolution by the courts, DNR may consider any one of the following as sufficient evidence to consider a water body as being navigable for title purposes.

a. The water body was meandered during original U.S. Government General Land Office surveys. This is commonly accepted as indication of navigability as the instructions to the General Land Office surveyors in the late 1800's were to set "meander lines" on all navigable waters. The Deschutes was not meandered during the General Land Office surveys.

b. The water body is tidal.

c. The water body was capable and susceptible of being used in its natural state for the transport of useful commerce.

d. Evidence that the water body was used at any time in the past for the transport of useful commerce. Transport may be by steamboat, canoe, rowboat, rafts, or other water craft, and may include floating or propelling of log booms as distinguished from single logs. Historical evidence is the key issue for establishing navigability on non-meandered bodies of water like the Deschutes. The recent court case regarding the Stillaguamish River resulted in court action declaring the river "navigable" on the basis of evidence of past uses of the river by steamboats, rowboats, rafts, and native Americans hired to transport goods, produce, machinery and animals in canoes. Definitive research on the navigability of the Deschutes has apparently not been performed and no action has been taken by DNR to assert title.

At this time, the Department of Natural Resources does not have a policy of resolving outstanding "navigability" issues. Such actions are taken when strong interest or lawsuit arises involving title to a specific body of water. (An example was the dispute over ownership of commercially-important gravel bars, which led to the Stillaguamish case described above.) While DNR does not currently pursue active resolution of ownership issues, the Department also does not automatically relinquish title to all shorelands, but simply leaves the issue unresolved until a specific dispute or interest triggers resolution.

A 1984 Aquatic Lands Policy Plan for DNR makes several recommendations on resolving the "navigability" question and on management of state-owned aquatic lands. Key recommendations regarding the "navigability" issue include:

(1) The Department should actively assert ownership to aquatic lands it considers to be state-owned and provide information to the public on the extent of state ownership.

(2) The boundary of public ownership on non-tidal waters should be the ordinary high-water mark. This should be considered to be the line of upland vegetation, or in the absence of vegetation the line of mean high water.

(3) The department will actively improve public access and recreational use of state-owned aquatic lands. Public use and access programs will be coordinated with local recreation planners and other state agencies.

No action has been taken on the recommendations contained in the Aquatic Lands Policy Plan as of the date of this report (June 1986).

[1]Conversation with Ron Hotecamp, Department of Natural Resources, Aquatic Lands Division.

[2]Draft Aquatic Land Policy Plan (May 1984), Department of Natural Resources.

G. OTHER PLANS AND STUDIES ON RECREATION IN THE DESCHUTES CORRIDOR

1. Related Efforts at the Time of This Study (June 1986)

At the time of this report, several planning and monitoring projects are under way which directly relate to recreation in the corridor. Hopefully, these efforts can be undertaken in a manner which will enhance all the recreational values and needs identified in this report. These contemporary efforts include:

a. Task Force on Capitol Lake. Charged with identifying an action program for dealing with water quality in Capitol Lake, particularly as it relates to recreational uses. Membership includes local government, state agency, and Governor's Office representatives. Coordinated by the City of Olympia.

b. Civic Urban Park Study. Objective is to identify a general plan for implementing the long-envisioned linkage between the State Capitol Campus and the Percival Landing area on Budd Inlet. This study may have major implications for shoreline configuration and uses on the east shore of Capitol Lake's lower basin. Coordinated by the City of Olympia.

c. Update of Thurston County Parks and Recreation Comprehensive Plan. A revised plan is currently being reviewed. Thurston County Parks Department.

d. Update of Tumwater Parks and Recreation Comprehensive Plan. Active work is anticipated to begin shortly on this project.

e. Update of the Thurston County Comprehensive Plan. Ongoing as of the date of this plan. Thurston County Planning Department.

f. Identification of Non-Point Pollution Sources on the Deschutes River. This is one of the projects planned for 1986 by the Environmental Health Section. Thurston County Health Department.

g. Ongoing Water Quality Monitoring by the Washington Department of Ecology. Washington Department of Ecology has monitored water quality data at the "E" Street bridge from 1977 to the present. The site is designated as river mile .06, site 13A060. Washington Department of Ecology.

h. Consideration of Regulations to Enhance the Cutthroat Trout Fishery in the Deschutes River. Washington Department of Game, coordinated by Jay Hunter.

2. Previous Recreation Plans and Studies in the Corridor

Beginning in the mid-1970's, a number of recreation-related plans and studies were prepared for various segments of the corridor. Capitol Lake has been the subject of a number of studies, due to its high

visibility and ongoing water quality problems. For a comprehensive description of water quality related studies see "An Assessment of Water-Related Reports for Thurston County, Washington" (1985), Thurston Regional Planning Council and Deschutes River/Capitol Lake Water Quality Assessment (1982), Washington State Department of Ecology.

Some of the notable studies and plans regarding recreation in the corridor are as follows:

a. Open Space and Recreation Plan for Capitol Lake (December 1966, Richard Hagg Associates, Inc. for the Capitol Lake Coordinating Committee). This report include a 25-year plan for recreation and open space development of Capitol Lake including:

   -- Landscaping and sculpting of the shoreline and adjacent areas
   -- A system of looped foot and bicycle paths around the various basins of the lake.
   -- Establishing a fish and wildlife sanctuary in Percival Cove and Percival Creek.
   -- Preserving the old brewery house for restoration as a community facility.
   -- A moratorium on clearing the steep slopes surrounding Capitol Lake.

b. Capitol Lake Restoration Plan (1976, Washington Department of General Administration). This plan recommended recreational and open space enhancement of Capitol Lake and the surrounding visual lake basin, to be undertaken in conjunction with lake restoration via a dredging program. Again, looped trails were proposed, linked at various points to major streets and neighborhoods. Several of the recommendations have been implemented in development of Marathon and Capitol Lake Interpretive Parks.

c. Thurston County Parks and Recreation Comprehensive Plan (Draft, 1986, Thurston County Parks Department). The draft Parks Comprehensive Plan includes as general policy the goal of preserving public access to waterfront areas. The plan identifies the County has being 38 percent deficient in freshwater beach access and projects an increase of 50 percent deficiency by the early 1990's. These calculations are based on a standard of 10 feet of freshwater beach per 1,000 population.

   A user survey in 1984 indicates that nature trails, swimming areas, group picnic areas, jogging/walking trails, and children's playground areas were the top five facility needs. The plan notes that there are no suitable publicly-owned lands in the County for freshwater swimming. At the other target recreational uses can be provided in conjunction with almost any type of recreational development, a priority recommendation for immediate action is acquisition and development of a freshwater swimming area.

d. Tumwater Parks and Open Space Plan (1978, City of Tumwater). Swimming, fishing and boating areas on Capitol Lake and the

Deschutes River were recognized as highly desirable in the 1978 Plan, especially close in sites which could serve the needs of young and elderly for easy access. The Plan's number one priority was acquisition and development of the Deschutes Way Park. Except for the recommended boat ramp, the 1978 Plan's concept of the Deschutes Way Park is fully reflected in the Tumwater Historical Park as it has been developed.

The Plan also specifically recommends acquisition of property near Henderson Boulevard (recommended for 1981), with development to follow (slated in the Plan for 1983). While no site has been acquired on a permanent basis, the City of Tumwater currently has a short-term lease on property north of Henderson Boulevard on the east side of the Deschutes, and is obtaining permits for temporary use as ballfields and playing fields.

Attachment

1. "Development Plan" from 1966, Capitol Lake Study.

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ATTACHMENT 1

OPEN SPACE AND RECREATION PLAN FOR CAPITOL LAKES
OLYMPIA AND TUMWATER, WASHINGTON
PROJECT NO. WASHINGTON P-114
DECEMBER, 1966

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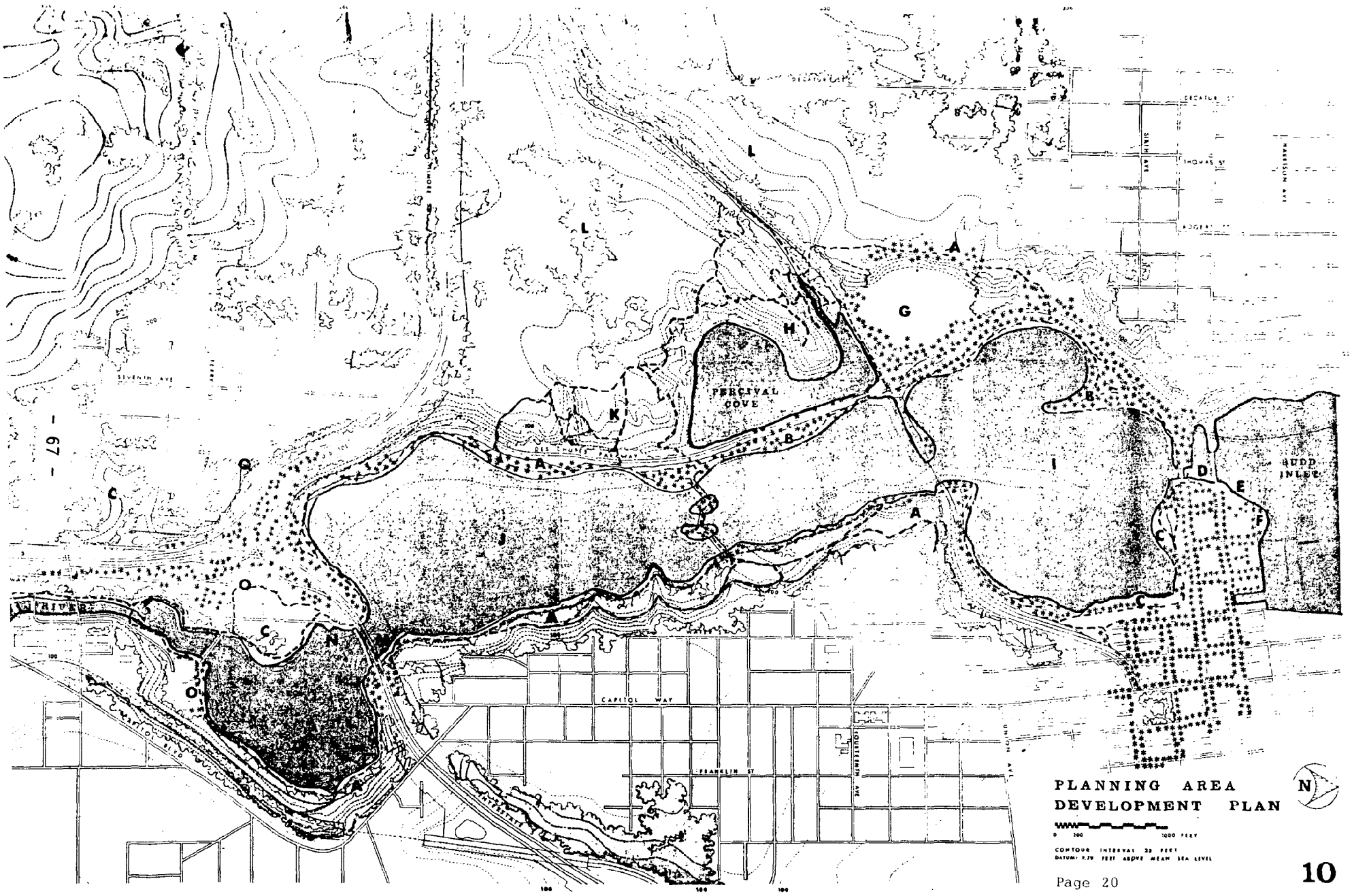

PLANNING AREA DEVELOPMENT PLAN

N

0 500 1000 FEET

CONTOUR INTERVAL 20 FEET
DATUM: 9.79 FEET ABOVE MEAN SEA LEVEL

10

DEVELOPMENT PLAN

LEGEND

A. Loop Path
   Continuous Pedestrian
   and Bicycle Path

B. Picnic Area

C. City Park
   Swimming
   Wading
   Tennis
   Play Sculpture
   Food Concessions
   Boat and Cycle Rental
   Festival Square
   Promenade
   Artesian Well

D. Salmon Viewing Platform

E. Fishing Pier

F. Port View Park
   Sitting
   Restaurants
   Tourist Centers

G. Playfields

H. Wildlife Preserve

I. Boat Basin
   Sailing
   Canoeing
   Rowing

J. Power Boating

K. Wooded Park
   Group Picnics

L. Special Use
   College Campus
   Golf Course

M. Suspension Bridge

N. Boat Launch

O. Historic Site

P. Falls Park

Q. Viewpoint